

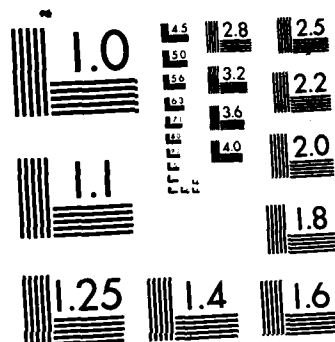
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TRAINING DATA AND ANALYSIS CENTER ORLANDO FL SEP 85

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# INITIAL TASKING SUMMARY (FISCAL YEARS 85-90)

SEPTEMBER 1985

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DEPARTMENT OF DEFENSE

TRAINING DATA AND ANALYSIS CENTER

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<p>The Training Data and Analysis Center (TDAC) Initial Tasking Summary defines and documents major project areas which were identified for TDAC's focus by the Services, Unified/Specified Commands, and the Office of the Secretary of Defense (OSD).</p> <p>This report outlines the process by which the task and topic areas were identified, discusses the project resource requirements, and summarizes plans for each of the topic areas. The plan for each topic includes a background statement, identification of sponsors, a detailed plan of action at the project level of detail, a listing of critical questions which could influence the project efforts and the anticipated impact the projects will have on the DOD training community. Each Plan of Action addresses specific tasks within the projects as appropriate. These tasks provide both long and short term products. The short term products, in nearly all cases, will be an integral part of the long term project.</p>				
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# FORWARD

This Report represents the last step in a multistep effort to define the initial (3-5 years) tasking for the Defense Training Data and Analysis Center (TDAC). The preliminary document entitled "TDAC Initial Tasking (Fiscal Years 85-90)" was distributed on March 28, 1985. An extended version incorporating user comments and adding detailed plans of action was published in draft form on May 31, 1985. This final report incorporates user comments on that draft.

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## OVERVIEW

### INTRODUCTION

This report, the TDAC Initial Tasking Summary, represents the final step in our process to identify, define and document the initial set of major project areas on which TDAC has been asked to focus. The first step involved soliciting tasks from all potential TDAC users. Some 143 tasks were identified by the Services, Unified/Specified Commands, and the Office of the Secretary of Defense (OSD). These tasks were collected and organized into 16 major issue or topic areas. In the second step, TDAC developed preliminary plans of action addressing the major topic areas and providing them to the Defense training community for review and comment. The final step, summarized in this report, expands the plans of action to include detailed tasking statements that describe specific TDAC projects, tasks, decision points, potential problems and impacts.

This report is organized into two sections. The Overview Section outlines the process by which the task and topic areas were identified, discusses the project resource requirements, and General Plan of Action applicable to all projects. The Topics Section summarizes our plans for each of the topic areas. The discussion for each topic includes a background statement, identification of sponsors, a detailed plan of action at the project level of detail, a listing of critical questions which could influence the project efforts and the anticipated impact the projects will have on the DoD training community. Each Plan of Action addresses specific tasks within the projects as appropriate.

The tasks identified in this Tasking Summary will provide both long and short term products. Most of these products are noted in the individual project descriptions. The short term products, in nearly all cases, will be an integral part of the long term project and in most cases provide intermediate results that become available before the final product is completed. They will therefore be the first answer and not the ultimate or final answer.

### PROCESS

The 16 topic areas identified in this report resulted from an extensive effort during the Fall of 1984 to survey potential TDAC users for issues that TDAC should address. Twenty-four organizations responded with 143 separate tasks. Additional tasks have been identified since our initial survey. While we have attempted to consider these tasks in our projects, we have not changed the statistics in the summary to reflect them. All these new tasks fall into the original 16 topic areas. The list of sponsors and number of tasks proposed are provided in Table 1.

TABLE 1 - TDAC SPONSOR LIST

	<u>NO. OF TASKS</u>
<u>SERVICES (52 TASKS)</u>	
ITRO	18
HQ ARMY	5
CNO	5
USN (CNET)	12
USAF (ATC)	4
HQ USMC	8
<u>JCS/UNIFIED &amp; SPECIFIED COMMANDS (31 TASKS)</u>	
USREDCOM	2
ADCOM	1
CINCUSAREUR	1
USCINCEUR	10
USCINCPAC	14
USAF (SAC)	3
<u>OSD (60 TASKS)</u>	
OASD FM&P(MP&R)	1
OASD FM&P(MP&FM)	24
OASD(C)	1
OASD(RA)	9
OSD(PA&E)	9
OUUSD(R&E)	8
OASD FM&P(CPP&R)	7
OASD A&L(I)	1
<u>TOTAL</u>	<u>143</u>

The next step involved an effort to aggregate the 143 tasks into broader topic areas. The results of this process were reviewed and approved by the TDAC chain of command and published in March 1985. Comments on this report have been included in this report.

A listing of the 16 key topic areas and sponsors who identified specific tasks is provided in Table 2. Topic areas are not prioritized or rank ordered.



TABLE 2 - TDAC KEY AREAS AND SPONSORS

TOPIC AREA	SPONSOR
OCCUPATION BASED COHORT DATA FILE	ITRO, USN CNET, HQ USAF, USAF ATC, HQ USMC(DCOS-T), USCINCEUR, USCINCPAC, USAF SAC, OASD FM&P(MP&FM), OASD(RA), OSD(PA&E), OUSD(R&E), OASD FM&P(CPP&R)
SSN BASED COHORT DATA FILE	ITRO, USN CNET, HQ USAF, OASD FM&P(MP&FM), OASD(RA)
TRAINING RANGES	HQ USA, HQ USMC, USREDCOM, USCINCEUR, OASD FM&P(MP&FM)
READINESS AND EXERCISE	ITRO, HQ USAF, USREDCOM, USCINCEUR USCINCPAC, OASD FM&P(MP&FM), OASD(RA), OSD(PA&E)
JOINT/INTEROPERATIONAL TRAINING	USREDCOM, USCINCEUR, USCINCPAC
SIMULATION/TRAINING DEVICES	ITRO, HQ USAF, OASD FM&P(MP&FM), OSD(PA&E), OUSD(R&E), OASD FM&P(CPP&R)
RC OCCUPATION BASED FILE	USN CNET, USCINCPAC, OASD(RA)
RC TRAINING FACILITIES, EQUIPMENT AND SUPPORT	HQ USMC, OASD(RA), OSD(PA&E)
INDIVIDUAL AND UNIT PERFORMANCE DATA	ITRO, USN CNET, USAF SAC, HQ USA, CNO, HQ USAF, HQ USMC, OASD FM&P(MP&FM)
TRAINING SYSTEM PERFORMANCE DATA	ITRO, HQ USAF, USCINCEUR, OASD FM&P(MP&FM)
TRAINING COSTS	USAF ATC, HQ USA, HQ USMC, USAF SAC, OASD FM&P(MP&FM), OASD(C), OSD(PA&E), OUSD(R&E), OASD FM&P(CPP&R)
INTEGRATION OF DATA BASES	CNO, USN CNET, USCINCEUR, OASD FM&P(MP&FM), OASD(RA), OUSD(R&E)
TRAINING INSTALLATION DATA BASE	HQ USA, USN CNET, OASD A&L(I)
COMPUTER BASED INSTRUCTION	ITRO, HQ USA, CNO, HQ USAF, HQ USMC, NORAD, OUSD(R&E)
CLEARING HOUSE FUNCTION	ITRO, USN CNET, CNO, HQ USAF, HQ USMC, OASD FM&P(MP&FM), OASD FM&P(CPP&R)
TRAINING TECHNOLOGY TRANSFER	ITRO, HQ USAF, USCINCEUR, OUSD(R&E)

## RESOURCE REQUIREMENTS

TDAC resources assigned to accomplish the projects are determined by user tasking priorities and are consistent with ongoing efforts and agreements with other activities to work together on common problems. It was noted that considerable work is in progress and funded by the Services or OSD that relates and interacts with the TDAC topic areas. This work is being done by the Service training commands, schools, labs, as well as OSD and other agencies. In these cases, TDAC will assist and track the ongoing work and be available to house, support and maintain the resulting data as appropriate. Capitalizing on work in progress will avoid duplication and maximize the effectiveness of TDAC resources. Cooperative arrangements are being made with organizations like the Manpower and Training Research Information System (MATRIS) and the Defense Manpower Data Center (DMDC) for projects of this type.

## PLAN OF ACTION

TDAC has developed a general model of operation that will be used for all projects. This general plan of action is shown in Figure 1 and discussed below. In addition, each of the 16 topic areas has a unique tailored plan of action that is specified in the Topics Section of this report.

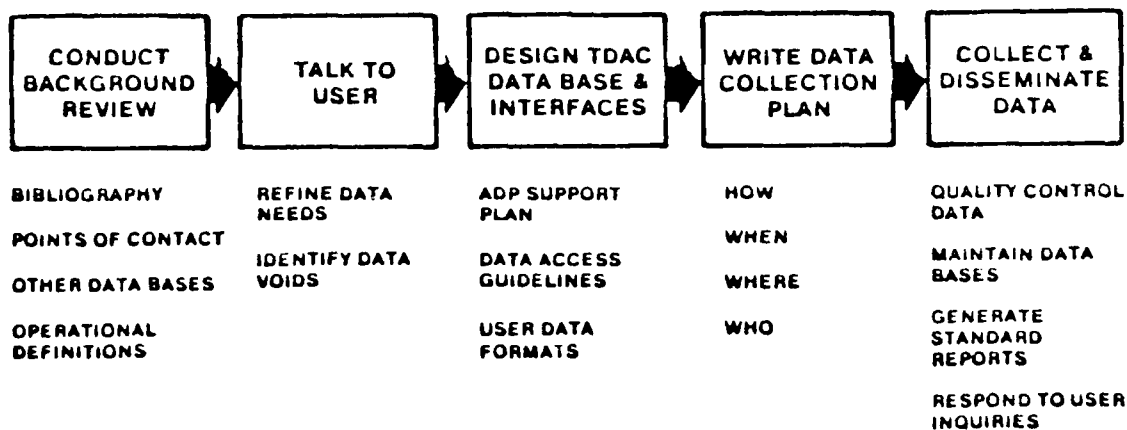


FIGURE 1. GENERAL PLAN OF ACTION

(1) CONDUCT BACKGROUND REVIEW

Conduct a review and assessment of the definitions currently in use by the Service R&D, training, and policy communities. Summarize and compile a set of common and unique definitions to assist in "crosswalking" between data bases and increase standard language in the DoD training community. Compile a list of existing and related data bases, R&D and/or operational projects, and points of contact.

(2) DISCUSS ISSUES WITH USER

Compile a list of data/information requirements through discussions with key Service and OSD personnel. Emphasis will be to identify their major needs that can be addressed with existing data. Data voids will also be identified as part of this step.

(3) DESIGN DATA BASE SYSTEM

Based on an understanding of existing Service data bases and classification systems, develop a classification system of technical, management, and resource information. In addition, prepare an automated data processing support plan, data access guidelines, and the required format for user data input.

(4) DEVELOP DATA COLLECTION PLAN

Working with data base managers and data developers/collectors identify relevant questions on data interface, common sense edit and checks. Develop a coordinated data collection plan that will minimize disruption to providers of the data.

(5) COLLECT AND DISSEMINATE DATA

This is the major step in the task execution and includes: (a) collect data through DoD data bases identified, (b) edit, process, execute quality control measures and insert data into TDAC formats and files, (c) evaluate the quality of available data and identify steps that could be taken to improve the quality and (d) disseminate data in standard and special reports in response to user queries..

CONCLUSIONS

The attached project area plans form the basis for developing the initial TDAC data files. The plans, while developed in coordination with potential users and reflecting TDAC's best efforts to synthesize and address the stated data needs of the training community, will be part of a living process that is ready to respond to the users' needs. Although some work toward file development has already begun, the plans

will be adjusted based on user comments, requirements and directions. The quality control of data is not addressed in this report. The need for effective quality control of information is recognized and quality control procedures and reviews will be established as initial data files are developed.

1. OCCUPATION-BASED COHORT DATA FILE  
(TDAC POC: Mr. Mike Kendall)

A. BACKGROUND.

The Users identified two major needs for TDAC occupational data. First, data such as course attrition and training load are needed to support analysis requests and to provide input to special reports such as the Military Manpower Training Report (MMTR) and the Annual Report of Training Activities For Civilian Personnel. The occupational data is also a critical element needed to address major questions such as the relationship between training investment and productivity, migration of training between the schoolhouse and unit, and the associated impact of this movement.

In addition to the specific needs identified, occupational data is required to connect the other training data areas TDAC has been asked to support. The occupational data needed stretches over many disciplines and organizational responsibilities, is costly to maintain, and is difficult to sustain as a corporate account for one unique training problem or perspective. Thus, this type of data collation is suited for TDAC as recognized by the users' requests for such a data base.

The TDAC occupation-based data file will provide a historical track of basic occupational training information from the Active & Reserve Forces, government agencies, and civilian sources. This data base system will allow users to analyze occupation-based training issues, identify cause and effect relationships, and ultimately improve training effectiveness. A reserve component-specific occupational data file is also being developed as a separate topic area to address reserve unique occupational data.

B. SPONSORS.

ITRO, HQ USAF, USN(CNET), OSD, ATC, USAF(SAC), HQ USMC, USCINCEUR, USCINCPAC.

C. PLAN OF ACTION.

The task area has been divided into four projects: (1) occupational data base development, (2) perfect data file requirements, (3) Military Manpower Training Report (MMTR) data base, and (4) interface of occupational data bases.

The general approach will be to link information from existing data files and gather data for all occupations at the same time. In situations where this is not possible, TDAC will work with users to identify a subset of occupations with specific emphasis on those identified for a TDAC focus such as

the Army's Signal School MOS's. In each effort the approach will follow the general plan of action for developing TDAC data files.

PROJECT 1: Occupational Data Base Development.

The project will define, develop, and support a prototype occupational data base. This will be accomplished by reviewing the content and availability of existing systems and discussing expectations of the TDAC system with the Services. The basic notion is to build the file by extracting and matching a small single record for each occupation. The extent and complexity of this task will depend on the amount of data required to meet the needs of the TDAC users.

The prototype file will extract information from Training Files accessible to TDAC. In many cases the occupational training data will have to be "teased" from other training related files. For example, the individual data in existing SSN-type files at the Defense Manpower Data Center (DMDC) will be aggregated to create occupational statistics such as profiles of individuals by career field and average length of training. Other data sources such as the Military Manpower Training Report (MMTR) file and Comprehensive Occupational Data Analysis Program (CODAP) files will also be explored and the relevant information data will be added to the prototype file.

The building block approach is a critical aspect to this project. The initial baseline file will be developed early and expanded over time. In this way we will be able to provide products to users quickly and to improve our support as more data becomes available. It is anticipated that the development of the occupation file will continue for several years. As a result, additional new information should be available to users each year. The data priorities during the expansion period will be determined by user needs. Another related potential effort in this area is the creation of a data base to support development of the Annual Report of Training Activities For Civilian Personnel which is being explored with OSD (Civilian Personnel). The exact scope and resources for this effort have not yet been determined.

PROJECT 2: Perfect Data File Requirements.

A second parallel effort will review the occupational data from a requirements point of view. This initiative will identify the contents of a "perfect" data file from the viewpoint suggested by the tasks identified by the TDAC users. The project will then explore the availability and accessibility of the data required, estimate the cost and benefit of obtaining essential data, and define the risks of not having specific data elements.

Work on this project has already begun via an OSD contractual effort with the Rand Corporation. To date the effort is focusing on three broad major categories of training issues. The first category has been termed course-related analyses. This includes task selection for courses, the use of training technology, training proficiency measures, and long-range course planning in light of new weaponry, tactics, and logistic support configurations. The second category addresses the general area of the mix of formal (schoolhouse) versus on-the-job training. This includes the baseline occupational data needed to address questions and track the results of past experience. The third category deals with the relationship between occupational training, readiness, and productivity in peacetime and wartime.

The topics encompassed in the three broad categories noted above will be refined by developing a set of critical questions and assessing how well the existing available data would allow them to be addressed. The generation of the set of questions and assessments will involve the Services, OSD, and TDAC.

Another part of the project will be to identify the "ideal" data needed to address the questions and to suggest methods to address them. The ideal data can then be compared with available data to identify significant gaps that must be filled to improve or even undertake certain analyses. Ultimately, this effort will allow compromises between ideal and practical data selection. Each recommendation will also include a cost estimate for preparing, collecting, and maintaining the data in question.

### PROJECT 3: MMTR Data Base.

The Office of the Secretary of Defense is required to prepare and submit annually the Military Manpower Training Report (MMTR) to Congress. The MMTR provides, explains, and justifies Service estimates of the average student loads for the current and subsequent two fiscal years. TDAC was tasked to assist OSD and the Services to compile the annual MMTR and enhance its usefulness starting with the FY 1986 MMTR.

Our first MMTR (submitted March 85) has reaffirmed that the MMTR production schedule is very tight. The data is not available until early in the calendar year, and OSD must deliver the report to Congress by March 1. Two major needs were identified in this initial effort that will guide TDAC actions:

(a) MMTR processing should be automated to meet the schedule, maintain report quality, and improve usefulness of the MMTR data.

(b) The MMTR data must be made more accessible to the users for their own analyses.

The first action proposed by TDAC is already under way. We are working with the Services and reviewing the existing data bases used to provide training information for the MMTR. We are also working with the Services to define terms in a way that will allow the collection of consistent types of data across the Services for all the MMTR information subcategories. The users will be very involved with this effort and will be asked to specify the MMTR-related information that would be most useful to them. A plan will also be developed and coordinated with OSD to automate the transfer of relevant FYDP data to TDAC. This step is key in improving the timeliness of producing the MMTR.

During the next phase a plan for automating the transfer of data from the Services and the FYDP to TDAC will be finished and implemented. Inconsistencies among the Services in calculating the different types of inputs will be resolved. User-generated improvements to the MMTR will be initiated and a revised format for the data call will be developed.

Enhancements developed in the previous steps will be evaluated by the users to insure they accurately meet their expressed needs. Modifications to the processes and analyses will continue as user needs change.

Maintaining and revising the MMTR data base will be a continuous process with full recognition of the need for year-to-year consistency in the MMTR formats. As user needs change the MMTR data will be modified to meet those needs. In addition, the data base will provide the potential to answer many questions that are not addressed in the published MMTR. Reviews of Service data base changes will periodically be necessary to ensure that the MMTR data base remains responsive to the user communities. Immediate improvements in the preparation of the report will be noticeable in the short term.

The FY87 MMTR will contain substantially improved trend analyses based on three years of reliable data available to answer many training related questions that cannot be easily answered now. The response time to answer many of the questions should be improved.

#### PROJECT 4: Interface of Occupational Data Bases.

Every new system introduced in the military forces requires a training program for personnel who operate and maintain it. Each of these training programs must be based on some type of task analysis by occupation. Similarly every training course, whether it provides initial, advanced or refresher training is rooted in the tasks that the individual must perform on the job. Obviously the occupational analysis systems used to support the wide range of training needs must themselves be somewhat specialized and tailored. A good example of this is found in occupations where the initial schoolhouse training is more fundamental and the detailed training is largely



accomplished in the field. In these areas, the level of task analysis needed to develop training for a specific weapon system is often more detailed than that required for an initial skills training course. However, it appears that some commonality among the different occupational analysis systems is needed to improve efficiency and the integration of training for new systems with the schoolhouse training program and its emphasis on existing systems, occupation areas, and so forth. Unfortunately, existing linkages between occupational analysis systems appear quite limited at best. This TDAC effort will initiate a review of the different occupational analysis data bases and determine the potential for developing a better crosswalk between the systems used.

In the process, it will be necessary to review and compare the basis and use of current occupational analysis data bases. TDAC has already begun discussions with the Air Force Human Resources Laboratory (AFHRL) on an Air Force specific project entitled Task Identification and Evaluation System (TIES) that is looking into this exact problem for the Air Force. TDAC will track and support the AFHRL effort. We will also attempt to work with the other Services on this question and help transport or generalize the results of the AFHRL effort to a multi-Services environment.

In a similar vein, TDAC will work with the DoD civilian and private sector communities to investigate what types of occupational analysis and training information are available in civilian skills areas. One initiative will be to try to develop linkages to an ongoing Joint Service project that is crosscoding military occupational information to those used in the private sector. One part of an effort will involve a review of data that actually exists and is being collected in the private sector. Pending the results of this review, the potential of adding the private sector training data to the TDAC occupational data or the crosscode file will be determined. A recommendation regarding the automated use of the existing DOD crosscode data will be made by second quarter 1986.

#### D. CRITICAL QUESTIONS AND DECISION POINTS.

(1) What type of data would be most useful to fill the expressed users needs, how available is the data, what is the quality of the information, and what are the logical next steps in developing this critical data file?

(2) How difficult will it be to automate Service input to the MMTR?

(3) How difficult will it be to access other data bases to augment the current training load data received?

(4) What type of data is available at the Defense Manpower Data Center (DMDC) to complement the training load data?

(5) How detailed is the occupational data contained in other systems?

(6) What are the key data voids?

E. IMPACT.

In the near term, this effort will provide information on the amount and type of occupation-based training data available in the existing data system. In addition, it will continue to improve the quality and usefulness of the MMTR.

The longer term product will provide the occupation data base system needed to address the critical issues facing the military training community. Data limitations will likely mean we will have to focus on a subset of occupations in the near and mid term. Every effort will be made to collect as much of the appropriate data as possible for the full set of military skills.

## 2. SOCIAL SECURITY NUMBER (SSN)-BASED DATA COHORT FILE (TDAC POC: Mr. Mike Kendall)

### A. BACKGROUND

The DOD training community has surfaced a number of key questions related to the quantity and quality of training necessary for all Service personnel: active, reserve, and civilian. Examples of these questions are: what are individual skill levels at various points in time; what are the rates of skill decay; when is refresher training needed; when and why do training losses occur; how specialized should training be; and how much time do individuals spend in training? To answer these questions, an information source is needed that links pertinent demographic information for individuals with their career training experiences.

The SSN-based file will track an individual's training experiences, in both the formal training and on-the-job (OJT) sectors and is expected to be a critical and integrating part of most of the TDAC efforts. The file will include data on demographics, initial training courses, training performance, assignments, OJT occupational experience, follow-on training, job performance, and so forth. Once this basic information is collected in an SSN data file, it will be possible to integrate it with the other TDAC data files to address user issues.

Extensive SSN data exists and is accessible now in the manpower and personnel data files of each Service and at the Defense Manpower Data Center (DMDC). DMDC maintains a large body of information on military personnel in the Department of Defense based primarily on extracts from the Services' military and civilian personnel master files. DMDC data covers all active enlisted accessions since July 1970, all active military since June 1971, and reserves and civilians since 1974. While these files have extensive coverage, their data content is geared toward personnel policy rather than training-related information.

Detailed SSN-based training data for individuals however, is much less accessible. The individual training data that is collected is usually maintained at widely dispersed locations, is generally not automated, and is seldom used after the individual completes a course. For example, all Services do not collect end-of-course scores by SSN in centralized automated training systems. Since this critical data is not centrally maintained, an extensive effort would be required if this important data void were to be filled. Similar data voids exist in the OJT arena.

### B. SPONSORS

ITRO, HQ USAF, USN(CNET), OASD(RA), DASD MP&FM

### C. PLAN OF ACTION

The SSN-based file will be developed along the lines of the TDAC General Plan of Action for creating data files. In addition to execution of the broad tasks of this general model, specific tasks are planned that will create an initial usable SSN-based cohort data file within the first year. This initial file, which will be built with the assistance of DMDC, will extract and merge existing data from several different personnel and training data sources. Four separate but related projects will be accomplished to meet the users' needs in this area. The first two center on individual data from DMDC and Service personnel files. The third and fourth projects will focus on collection of SSN-level data from training commands and schools as well as OJT and other training data maintained by units.

The concept for construction of the initial SSN file is to create an SSN framework, then build on that framework with relevant data from existing personnel and training files. This technique has proven successful in DMDC. Development of the file beyond this initial stage will be a product of the tasks in the TDAC General Plan of Action and will be based on user requirements.

#### PROJECT 1: Prototype SSN-Based File from DMDC Data.

First, TDAC and DMDC are working to construct a prototype SSN-Based Training Cohort Data File using data elements already contained in the DMDC enlisted manpower data bases. The file, indexed by SSN, will contain those data elements that have training relevance and are already included in the data updates provided to DMDC. The initial phase will establish a design framework of the file which will allow for expansion in the future to accommodate other data elements as they become available. Working with DMDC and the Services, TDAC will review the information available from the DMDC data bases and define the format for the initial file. We now plan to develop the prototype file design by the end of FY85. The second phase consists of actually building the skeletal files. The data will be extracted from the DMDC file to create a prototype data file consisting of current and historical information available from the existing DMDC data library. This task will be accomplished principally by DMDC with some TDAC support. For planning purposes, we expect initial SSN data will be available in the first half of FY86.

#### PROJECT 2: Expansion of Prototype File with Personnel Data.

TDAC, working with DMDC and the Services as required, will review documentation of the Service training-related military and civilian manpower and personnel master data files. The focus of this effort will be to identify available SSN-level training-related data contained in the personnel master file

beyond that already captured in the DMDC extract. Included will be relevant data on reserve component personnel on active duty for training purposes. TDAC will work closely with DMDC and the Services on this effort. A proposed change to the DMDC data extract will be discussed with each of the Services and a change to the applicable DOD Instruction will be drafted and coordinated.

Another specific high priority task in this project will be to work with the Navy Personnel Research and Development Center (NPRDC) on an ongoing training data initiative. NPRDC is developing a prototype data system needed to support Navy specific questions like those identified by the TDAC users. The system that is being developed looks very promising and could serve as the model for TDAC efforts in this area. TDAC will track this effort and eventually may house, maintain, and support the data provided by NPRDC.

### PROJECT 3: SSN-Level Schoolhouse Training Data.

The third project is to identify useful and relevant SSN-level training data that is maintained centrally and maintained at the schools. As a result of this effort, additional data elements may be added to the SSN file. Cooperation to date has been excellent and discussions have begun with each of the Service training commands. TDAC will work with each Service independently to identify those data elements that can be integrated with other available data to satisfy Service taskings to TDAC.

Based on the discussions to date with the Service training commands, there are numerous decentralized data files available at various training locations. TDAC will continue discussions with the Service POC's to determine which systems contain key data elements that offer the highest potential benefit to the user. The general approach will be to work with each Service to further articulate the high priority products desired and to develop a plan to capture the required data elements. A survey of existing systems in all Services and the data they contain will be completed by June 1986. Based on the results of that information and Service priorities, data element collection should begin during 1986. Due to the dispersed nature of these data bases and frequent lack of maintenance of historical records, data collection on a routine basis will be difficult, and in many cases, unattainable. The first efforts will focus on those areas where data is easily accessible. Ongoing efforts by the Services to automate many of these files will facilitate data collection in the outyears. It is anticipated that Service taskings in this area will be continuous and will influence TDAC projects each year.

#### PROJECT 4: Collect OJT and Other Unit Training Data.

The last project will identify sources of OJT and other training data that is maintained at the unit level. Data needs will be matched against existing data bases to determine availability and accessibility, then data collection plans will be developed as required.

As part of this effort, TDAC will review the centralized automated SSN data systems available at the unit level which may contain OJT information. In addition, specialized and unique data for specific areas of interest to TDAC users will be reviewed to determine the potential benefit and cost of data collection. As a follow-on to the discussions already initiated with operational commands, TDAC will begin a survey project to establish a baseline dictionary of systems to be considered for further development and review. The initial results of the project should be available by the third quarter 1986.

#### D. CRITICAL QUESTIONS AND DECISION POINTS

(1) What types of personnel data is available at DMDC and within the Services' personnel master files that would be useful in the SSN-based file?

(2) What are the users' specific needs and data requirements?

(3) How do these requirements match existing available data?

(4) What are the data voids?

(5) Can these voids be filled by linking to existing data sources?

(6) What other data bases have training related information at the SSN level of detail?

(7) How accessible are existing data bases?

(8) How can SSN data be interfaced to address training issues presented by TDAC users?

#### E. IMPACT

The SSN-based cohort data file will provide an integrated system to allow the Services to track individual military and civilian training information over time. Key elements of this file could be available for use in the near term. TDAC users can apply this data file to examine issues such as the impact of changes in training patterns within the schoolhouse, cause and

effect relationships, the migration of training between the schoolhouse and the field, and other training relationships. As the SSN file develops, TDAC will link the information from this file with other TDAC files to support the Services' need for selected analyses.

### 3. TRAINING RANGES (TDAC POC: Mr. Joseph Nicholson)

#### A. BACKGROUND.

Mobility and lethality of weapons, size of forces, increasing environmental restrictions, and decreasing land and air maneuver area and training space availability have imposed severe limitations on collective training at all levels. Maximum utilization of DoD ranges and training areas and Joint Service sharing of such limited assets will become a necessity. A descriptive inventory of ranges and training areas together with capacities, limitations, costs, and utilization rates would present to Service and Joint Service planners the full set of alternatives for training. Air-to-ground tactical ranges with realistic threat simulation, Electronic Warfare (EW) training areas and sea-land training areas to support joint force amphibious operations are examples of specialized categories to be cataloged. The range inventory data will support the Service correlation of specific range requirements against available inventory, analyses of range assignment strategies and cost and effectiveness studies between ranges and simulators.

The Ranges Data, the Training Installation Data and Reserve Component Training Facilities, Equipment and Support Data files have a high degree of commonality. Although these data files will initially be developed separately, they will be coordinated and organized to allow future combination into a single integrated data base.

#### B. SPONSORS.

OASD(FM&P), OASD(RA), HQ USMC, USCINCEUR, USREDCOM, HQ USA

#### C. PLAN OF ACTION.

Ranges and training areas (both CONUS and OCONUS) will be described utilizing and possibly combining existing Service inventories of ranges with the additional available information needed to complete each file. Once initial compilation is complete, the capability of the data base to meet user requirements will be examined. Users of training ranges will be surveyed to determine if more specific data is needed. If needs are identified and the data is not readily available, efforts will be undertaken in coordination with each Service to explore the feasibility of development. A user group comprised of Service range data developers and key range and installation personnel will be formed to steer and monitor the data base development.

The effort to produce the coordinated Ranges and Training Areas data base includes a near term phase to define the data



base and identify potential data. The continuation phase will expand, complete, and maintain the data base in response to user requests.

The initial definition effort or near term phase is broken into the following subphases:

First, preliminary literature searches and Service contacts have identified data sources and POCs for Army, Air Force, National Guard Bureau, Navy, and Marine Corps range data. Visits to data base owners have begun and will be continued to negotiate access to existing data and to determine Service and OSD requirements for data and "lessons learned" from current data base development efforts. Future plans for automation/improvement of existing data bases will be discussed in light of a TDAC offer to service and maintain a central range and training area data base. Continued searches by both TDAC and Service POCs will identify additional sources for range and training area data not included in existing Service files.

Next, the program sponsors will be canvassed to determine the major needs for data and the capability to meet them from existing data sources. A list of data requirements will be generated based on these discussions and combined to define the total data base. Analyses of the types of potential information requests will be made to shape the organization of files in the data base.

Based on analysis of existing and projected Service data bases, information requirements and the characteristics of data displays required, a data base system for ranges and maneuver areas will be designed. Connections to existing service data bases (e.g. Army Ammunition, Ranges and Targets (DAART)) will be established and plans developed to translate hardcopy data bases, to include geographic information, into electronic format. Descriptions of data files, an automated data processing support plan and data access guidelines will be prepared.

The completion of the initial phase of the data base development will consist of the interconnection in either an automated or hardcopy form of Service data bases and publication of descriptions of the data base content.

Once the available data is known and the data needs are identified, shortfalls in data can be assessed. Any voids will be presented to the users group and the TDAC chain of command together with a plan/cost estimate for filling them. Where it is decided to fill a data void, a data coordination effort will be defined for obtaining and sharing the missing data.

The continuation phase will focus on gathering data on additional smaller ranges and training areas; the addition of utilization data; responses to user requests for data; and maintenance/quality control of the data base. The user group would have oversight of the Ranges and Training Areas data base,

provide guidance on the protection of Service-sensitive data and serve as the agent to support maintenance and improvement of the data base.

D. CRITICAL QUESTIONS and DECISION POINTS.

- (1) How small a range should be included?
- (2) Should allied country (e.g., NATO) ranges be included?
- (3) What level of detail is needed and what would be the cost to develop any needed additional data?

E. IMPACTS.

Could have substantial contribution to Service requests for funding for range improvement, expansion of field training areas and determination of reserve component training distribution.

#### 4. READINESS AND EXERCISES (TDAC POC: Maj. Tom Pearson)

##### A. BACKGROUND

The Readiness and Exercises file spans all training areas beyond the institutional training of individuals and includes crew/team training and all levels of unit combined arms training exercises. The requirement as specified by the users is to provide data that will allow the quantification of the impact of training on readiness. The users have identified several areas of TDAC focus.

The first area involves training lessons learned from Service and Joint Service exercises. Field training exercises are expensive; yet, to date, no quantification has been made of their contribution in terms of improved training and potential lives and equipment saved. For over five years the General Accounting Office (GAO) and members of Congress have requested a more exact justification for training funds and a better utilization of training exercise lessons learned. The Joint Exercise Observation File (JEOF) maintained by USREDCOM contains data on 25 CONUS exercises and four overseas exercises. According to the developer, the JEOF file concentrates on procedures, tactics and doctrine without quantitative measures of performance or training deficiencies. The results of exercise after-action reviews and the training lessons learned from each event need to be made available to other units and Services.

A second area concerns information on the use of training simulation models and wargames which provide high quality, cost effective training alternatives for command and staff level personnel. Together they supplement field training by training wartime missions while minimizing costs. During the April 1985 meeting of the Working Group on the Use of Simulation Models and Wargames for Training, TDAC was asked to assist in cataloging Service and Joint Service training simulation models and training wargames.

A third area for TDAC assistance concerns the collection of data to support the Service quantification of readiness. The measurement of readiness of Service units, whether they be land, sea or air, has received criticism from OSD, the General Accounting Office (GAO) and Congress. Current measures of readiness are regarded as inaccurate portrayals of actual fighting capability. The Services and OSD have been attempting to derive more meaningful descriptions for readiness and to determine the contributing factors that make a good measure. The lack of quantified data on exercise results and their connection to meaningful measures of readiness prevents any learning correlation from being developed.

The fourth area under Readiness and Exercises supports collection of Service-wide data on unit-level training. The

Collective Unit Training Report was established in FY83 as a separate section of the Military Manpower Training Report (MMTR). Both reports, while maintaining individual identities, are also a volume of the annual DoD Force Readiness Report. Before that date the MMTR had only addressed the training of Service members as individuals in the institutional training base, leaving a gap in the total training readiness picture. The Collective Unit Training Report covers unit sustainment training, crew training, unit collective training and joint collective training. Thus, the two reports (the MMTR and the Collective Unit Training Report) present a more complete picture of Defense individual and unit training.

#### B. SPONSORS

ITRO, HQ USAF, OASD FM&P(MP&FM), USREDCOM, USCINCEUR, OASD(RA), USCINCPAC, OASD(PA&E), USN/CNET)

#### C. PLAN OF ACTION

The task area has been divided into four projects; (1) a training exercise lessons learned data file; (2) a DoD Simulation Models and Wargames catalog and data base; (3) training readiness data; and (4) an annual Collective Unit Training Report as a separate part of the DoD Force Readiness Report. The specific plans of action for each of the four separate projects are addressed below:

##### PROJECT 1: Training Exercise Lessons Learned Data

The object of this USREDCOM suggested project is to establish a data base that houses Service and Joint Service training exercise lessons learned data for Service and Joint Service command use. This project will be implemented in two phases to control the resource expenditure and support the users.

TDAC is supporting a USREDCOM effort to assess whether the existing JEOF should be expanded to include training or a separate training oriented data base developed. A USREDCOM decision is expected by July 1985 and TDAC will maintain the resulting data file for USREDCOM. Another effort will attempt to locate and merge other training exercise data into the USREDCOM training deficiency file. Two projects that may provide additional data is an Army Research Institute (ARI) effort for Army Training and Doctrine Command (TRADOC) to develop a data base of National Training Center (NTC) lessons learned and an Army effort to develop and maintain the Army Remedial Action Program file. Security provisions for classified data will be prepared as will an Operations Security (OPSEC) plan for this project.

Phase II will begin by identifying required data that exist but are not in the Phase I data base. Plans to add additional exercise data and associated measures of performance will be developed for USREDCOM and the Services. Discussions will be held with Unified and Specified Commands and Services to determine what additional data is available and appropriate to expand the capture of training lessons learned.

The development of the initial training lessons learned data base is shown as a one year project. Enhancement of the data files and expansion to include other Service data will depend on the availability of the data. Rather than duplicate Service efforts, TDAC will assist and piggy-back on existing projects to obtain exercise data. This dependency necessarily makes scheduling of Phase II efforts uncertain. Three to five years will probably be required to establish the full value of this project. Once the files are established, analyses will be performed as requested while the maintenance of the data base will be a continual effort.

The product of this effort will consist of a data base on exercise training lessons learned. Based on user requests, reports summarizing correlations of observations will be produced and distributed.

#### PROJECT 2: Training Simulation Models and Wargames Data Base

The training simulation modeling and wargame community of DoD has recognized the lack of a central repository of data or a DoD-wide descriptive catalog of training simulation models and wargames. At the April 1985 Working Group on the Use of Simulation Models and Wargames for Training held at Orlando, FL., TDAC was asked to assist in an effort to merge existing individual Service and Joint Service data into a single source document accessible by the entire community of users. Descriptions and data on training simulation models and wargames within all Services will be produced by utilizing and combining existing inventories of current training simulation models and wargames compiled as Service-unique documents and data bases. Users of training simulation models and wargames will be queried and missing data elements will be identified and reported to TDAC users.

The planned effort to produce the training simulation models and wargame catalog includes a near term phase to publish an initial catalog of training simulation models and wargames and a continuation phase to update, maintain and respond to future user requests for data. The initial definition effort is broken into the several subphases.

Preliminary literature searches and Service contacts have identified data sources and POCs for Army, Air Force, Navy and Marine Corps training simulation models and wargame data. An initial draft catalog of training simulation models and training

wargames will be published from information currently available from known sources.

The simulation models and wargames community will be canvassed to determine the major requirements for data and the capability to meet these requirements from existing data sources. The user community will decide if a new central data base is needed and if so, the required contents. If affirmative, an effort will be undertaken to review the data sources, estimate the resource requirements and design the file.

The principle products of this effort will be a DoD catalog of training simulation models and wargames together with an interconnected, all-Service data base.

### PROJECT 3: Collection of Training Readiness Data

This project will assist in the Services' establishment of measures of unit readiness for air, sea and land units that are relatable to inputs of training resources. It is recognized that this effort has been of concern to the Services as well as OSD for a number of years and that many efforts along this line have been carried out. Initial efforts by TDAC will involve only a very small commitment of resources and will consist principally of reviewing Service efforts to date, collecting data already derived in the area and developing a continuing dialog with the Service principals. The contract being awarded by OSD Program Analysis & Evaluation on "Resources-to-Ship Readiness Analysis" will be closely monitored; initially by the Training Effectiveness Division for applicable performance measures and later by the Collective and Joint Training Division as correlations between resources and readiness as related to training are developed. The results are expected to contribute to Service efforts to form the beginning of a measures-of-readiness data base. Simultaneously, an effort will be undertaken to review the existing training-related measures-of-readiness data and to identify other ongoing Service projects to develop such measures of readiness.

The schedule for this effort cannot be projected with certainty until the results of the OASD(PA&E) contract are known and other efforts are identified and evaluated. It is anticipated that data gathering efforts will continue throughout FY85 and most of FY86 with firmer projections of a master milestone schedule for this effort available about mid-FY86.

The ability to develop correlations between training exercises and readiness will depend on the success in this task and on the development of the training effectiveness data bases.

#### PROJECT 4: The Collective Unit Training Report

The production of the annual Collective Unit Training Report will evolve from the OSD efforts accomplished over the past two years. Improvement and expansion of the existing report will take place over several years. Within the first year specific tasks will be initiated to provide an improved version of the current Collective Unit Training Report. Total effort on this project includes the following phases:

Through efforts on the FY85 MMTR, TDAC has identified the DoD Service POC for collective unit training data in the Army, Navy, Marine Corps, and the Air Force. During June 1985, informal contact will be made with each Service representative to review the existing Collective Unit Training Report format and content. TDAC will then develop a draft report format for the FY87 report including a revised schedule for phasing in Service-approved changes into the current report. The revised report format will key on the standardization of existing information formats and streamlined procedures for transmitting Service provided data to OSD. This increased Service participation in report structure is expected to produce an FY87 report that is a significant improvement over previous reports.

In order to continuously improve the report, the DoD Service representatives and OSD users of the report will be canvassed to determine the utility of the current report and provide recommended changes to the report format and content. Collective unit training data voids will also be identified during this phase. A consolidated list of data requirements and format styles will be generated based on these discussions and coordinated with everyone to define the final report content.

Based on analysis of the review with Service representatives and existing Service data bases, a new report format will be designed and coordinated with the Services. A key question will be if unit specific data should be provided or if type of unit information will suffice?

Maintaining and revising the Collective Unit Training Report data base will be a continuous process. As user needs change, the Collective Unit Training Report will be modified to meet those needs. In addition, the data base will provide the potential to answer many questions that are not currently addressed in the published report. The capability to extract and merge data from existing collective unit training data bases and the standardization of both data formats and narrative information description will be included. TDAC will also track Service data base changes to ensure that the Collective Unit Training Report data base remains responsible to the user communities.

The Collective Unit Training Report is an annual report due to Congress by 1 March. The basic report revision concept will be to build on the base already established, improve the quality of the data submitted and simplify the collection and reporting process. As noted before, immediate improvements in the report format will be noticeable within the first year, however, the most useful results expected from this effort will not be realized until 3-5 years from now.

#### D. CRITICAL QUESTIONS and DECISION POINTS

##### Project 1:

(1) The data input for this project may require a new reporting system or cause substantial modifications to current Service reporting systems. The acceptability of this change and the potential cost to the Services must be determined.

(2) Do OSD and the Services really want to support the establishment of a combat readiness data base? Who participates in this decision; TDAC, Services, OSD, and what is the "critical decision point"?

(3) Are exercise data currently being collected with sufficient quantification to permit correlation with measures of performance?

(4) To what level of unit exercises should training data be collected?

(5) How will the reporting system cope with the fluidity of personnel rotations in order to correctly address the roots of reported training deficiencies?

##### Project 2:

(1) What level of detail should be included in the description of the training simulation models and wargames?

(2) Should allied (e.g. NATO) developed training simulation models and wargames be included?

##### Project 3:

(1) What measures of readiness will the Services attach to their units?

(2) To what unit level should the measure of readiness be applied?

(3) Are different levels and measures appropriate between ships and ground units, active and reserve components and combat and combat support units?



Project 4:

- (1) To what degree does Congress, OSD and the individual Services use the current Collective Unit Training Report?
- (2) Can a standardized glossary of unit training terms be developed and utilized by each Services?
- (3) Will a revised report format adversely affect or improve individual Service data collection procedures?

E. IMPACTS

The ability to quantify training impact on readiness may significantly change the number, type and frequency of collective and joint training exercises.

The worldwide dissemination of all-Service collective and joint training exercise lessons learned data will answer long standing GAO and Congressional requests.

A DoD-wide training simulation models and wargame catalog will provide central inventory data to support the Services through correlation of new requirements against available inventory, analyses of training simulation models and wargame strategies.

The publication of the revised Collective Unit Training Report will assist the user of the report in determining the unit training readiness status and present an accurate portrayal of unit level training resource expenditures.

## 5. JOINT/INTEROPERATIONAL TRAINING (TDAC POC: Ms. Ann O'Kennon)

### A. BACKGROUND

A number of the potential TDAC tasks involve Joint Service interfaces in areas of joint operations. Joint operations require the transfer of information across service boundaries through Service-unique as well as Joint Service data networks. Service roles and missions may result in Service-specific training and procedures which do not integrate with other Services' training and procedures when conducting joint operations. Areas where Service-specific training may not adequately address the joint operations arena (in the view of the potential users) and where problems have been observed include communications, command and control (C<sup>3</sup>) in specific areas such as air defense, air support, fire support and amphibious operations. The lack of established joint training procedures and programs may contribute to the problem.

Subsequent to the TDAC taskings in this area a Joint Training Enhancement Committee (JTEC) was convened on the impetus of USREDCOM to focus attention on joint interoperability problems and to obtain solutions based on the expertise of a wide spectrum of unified and specified command personnel involved in joint operations. The TDAC effort in this area will be designed to assist, if requested, but not duplicate the JTEC actions.

### B. SPONSORS

USCINCEUR, USCINCPAC, USREDCOM

### C. PLAN OF ACTION

TDAC activity in this task area will depend on the activities of the JTEC and whether the original sponsors will use TDAC to assist in compiling data to assist in the solution of specific problem areas. Since the JTEC steering committee has not met, a projection of the full extent of TDAC involvement cannot be made. If the JTEC or original sponsors request TDAC to assist them in compiling the data which might assist in determining the problem solutions, this plan of action will be activated.

Individual problem areas will be analyzed separately. The issue areas will be prioritized through discussion with the principal sponsors and agreement reached on the order in which to proceed. For each issue area we will query the organization that identified the problem to determine the specific concerns and perceived deficiencies. At the same time the action office having policy control for the area of interface will be

identified and a point of contact determined for this specific problem. Dialogue will be encouraged between sponsors and action offices to determine if the problem can be resolved at that point or if further analysis is required to support a solution. A typical detailed problem analysis will follow this plan of attack.

A notebook will be compiled comparing Service and Joint-Service training practices and procedures with observed exercise deficiencies. Service and Joint Service "How to Fight " manuals will be researched to compile policies and procedures on the subject area. Sets of common and unique definitions and a list of existing and related data bases will be collected, a bibliography and points of contact established.

Next, a list of data/information requirements will be compiled through discussions with key user personnel. The critical problems which gave rise to this issue will be identified and expanded to insure that the issue is fully understood. Lessons learned data from joint exercises which highlight the problem area will be identified and collected. A matrix of Service policies and procedures, joint exercise problem observations from existing data and Joint Service training doctrine will be prepared. Additional data required to complete the analysis will be identified and collected.

Working closely with the primary user and principal action office, a summary of the information derived will be prepared. An internal lessons learned report will also be prepared to assist TDAC in solving similar issues in this task area.

The products of this project will consist of notebooks containing data matrices and analyses for each specific joint interoperability problem area. The lessons learned data will become part of the greater exercise data base to be developed as a product of the Readiness and Exercises task. Upon resolution of all of the specific issue areas, this task area will be combined into the general exercise data base effort as a subset of joint exercises.

#### D. CRITICAL QUESTIONS and DECISION POINTS

(1) Degree of TDAC assistance required to support the JTEC efforts?

(2) Prioritization of issues and the number of issues to begin analyzing?

(3) To what extent is this a problem of broad interest or a unique problem to be resolved by joint commanders?

E. IMPACTS

This task can contribute to resolution of a number of problems which have plagued joint operations for several years and will allow a better understanding of requirements for combining Service assets in a Joint Service operation.

## 6. SIMULATION/TRAINING DEVICES (TDAC POC: Mr. Jim Henris)

### A. BACKGROUND

The DoD training community requires relevant data to manage effectively the development, acquisition, and use of training simulators and devices. One of the major findings of the 1982 Defense Science Board Summer Study on Training and Training Technology was that the decentralized nature of training and lack of a central data repository has led to a large number of widely dispersed data sources. This situation has led to data voids which make it difficult to ascertain complete information on key training issues.

Preliminary discussions with the DoD training community have identified information voids in the following areas: policies and procedures used during the acquisition, modification and use of training simulators and devices; training simulator and device inventories; descriptions of the strategies used to develop successful training systems for different weapon systems; potential areas where simulators and devices for Joint Service training would be most beneficial; data and research findings which permit cost and effectiveness comparison between operational equipment and training simulators; transfer-of-training data for flight and other simulators; and data to support Service front-end analysis efforts. The common thread of issues submitted by users is a need for information and analysis related to the development, acquisition, use and disposal of training simulators and devices.

### B. SPONSORS

OSD (PA&E), OASD (FM&P), OUSD (R&E), ITRO, HQ USAF, USCINCEUR

### C. PLAN OF ACTION

Five interacting projects have been defined to accomplish the tasks identified in this topic area. While each of the projects is designed to stand independently, collectively they define the larger long-term simulator and training device (S/TD) data base program. While individually distinct, the data collected under the five projects will be merged as complementary elements in an overall S/TD data base program.

It is planned that the majority of S/TD data will be extracted from existing hard copy or automated sources. Collection of data from hard copy sources will be accomplished by TDAC. Collection of data from automated sources will normally require involvement by the holding organization. TDAC will work with the holders of such data to define extraction

procedures and will maintain/service the data once provided. Situations may arise requiring additional resources to obtain existing data. If they do, TDAC will assist the holding organization by providing additional resources or identifying the resource requirement to the TDAC chain of command.

Projects one and two will tap existing data and information sources to produce data bases for fielded and planned systems. Project three supports OSD efforts to implement the "DoD Guidelines for the Development and Acquisition of Training Simulators and Devices". Project four will support front-end analyses by providing specialized data required by that process. Project five is a long-term project to develop the optimal data base incorporating expanded information on both fielded and planned training systems.

#### PROJECT 1: The S/TD Inventory.

This project will focus on the collection of readily available information on fielded S/TDs from existing data bases, reports, and documentation. Emphasis will be on S/TD's incorporating recent technology (e.g., fielded in or after 1980) and those exceeding a predetermined unit cost (e.g., \$500K). The intent of this project is to collect data which will provide the maximum short-term benefit to users. It will also provide a basis from which to expand the data file as additional user needs are identified.

The initial phases of this project will be devoted to identifying existing data bases/documentation, primary information needs of users, and literature on existing systems. This will be accomplished by a literature review and continuing discussions with points of contact within the DoD training community who manage and use S/TDs. Specifically, dialogue will be sought with the Army Program Manager for Training Devices (PM TRADE), the Naval Training Equipment Center (NTEC), the Deputy for Training, Aeronautical Systems Division (ASD), Air Force, training commands, and operational commands.

The second step will be to collect data from the sources identified. Initial data collection will be accomplished within a limited number of specific functional areas such as aviation trainers and sonar maintenance trainers. Final identification of these functional areas and data collection plans will be coordinated closely with the Service users. The narrow focus of the initial collection effort will permit file structures, collection procedures, and output formats to evolve and be verified prior to collection of the bulk of the S/TD data. It is not yet possible to predict the exact format or breadth of the file that will be created under this project. However, it is clear that some data is available and that the initial inventory data base will have to be pieced together from a

varied set of data sources of differing quality. The users will be kept apprised of the status of the data files and will be encouraged to help define the data formats.

A major aspect of this project involves the quality control/validation of the data collected. This will be accomplished through common sense edits, cross-checking of information, and the continuous involvement of the DoD and Service organizations that provide and use the data. Realizing the potential sensitivity of data that will be collected, the policy and protocol used in collecting and releasing data will not only be closely coordinated with the Services, but must be in accordance with existing laws and regulations. In addition, a systematic and continuous assessment and refinement of the utility of the S/TD inventory data base, how well it meets design goals, and what, if any, upgrades are needed will be maintained including deleting elements not considered relevant. The quality control plans and edits will be available for review and the results of the quality control will be made available.

The final aspect of the project is use of the data base. Working with the users, standard report formats and procedures will be developed to respond to user requests.

The short-term payoff of this project will be a single data base permitting early identification of relationships among the principle S/TDs in use. In addition, aggregation of simulators and devices to describe/define training systems will be possible. In the longer term, the inventory generated in this project will serve as a baseline for the more complete S/TD data base described in project five.

#### PROJECT 2: The S/TDs in Planning and Acquisition.

This project is a parallel effort to the one just discussed. It involves systems currently going through the planning and acquisition process. This project will attempt to capture from existing Service and OSD information sources the types of information called for in the DoD Guidelines. It appears that there are limited system-level data available in a useable automated format and that the information that does exist would be costly and time consuming for TDAC to capture. However, it is clear that some information is available and we will generate the best possible data base from this information. We do not yet know how much data we will find or whether we will be able to access the data that does exist. Clearly answering these questions will have the highest early priority. In addition to the usage-oriented dialogue established in project 1, TDAC will seek out dialogue with Service laboratories and additional Service organizations actually performing training system acquisitions.

The initial effort will consist of identifying existing data bases/documentation for all Services as well as the primary information needs of all users. The plan is to review existing data from all Services and identify one Service for initial data collection. Actual data collection will likely track the functional areas identified in project 1 and be accomplished by fiscal year to conform with the annual orientation of planning information. File structures, collection procedures, and output formats will be developed, refined, and verified in this single-Service prototype. The Service selected for the prototype will be determined after the broad review has been completed based on interest, potential benefits, quality/quantity of available data, and involvement of that Service. After the prototype is completed, data collection efforts can be expanded to all Services.

One critical question which will be addressed is the exact format of the data base. The format will have to evolve over time as we learn more about the type, amount and validity of the available data and specific user needs. In addition to the specific planning and acquisition data base developed, the project will provide valuable insight for project three, which involves the data requirements associated with implementing the DoD Guidelines.

#### PROJECT 3: The S/TD Acquisition Process.

This project will support OSD efforts to implement the approved "DoD Guidelines for the Development and Acquisition of Training Simulators and Devices". There are two concurrent and interrelated efforts involved in this project. The first supports an OSD-generated Department of Defense Directive (DoDD) and Department of Defense Instruction (DoDI) to be developed in response to Congressional direction. The DoDD will formalize policy regarding the development and acquisition of training simulators and devices as defined in the approved Guidelines. The DoDI will define the procedures and data required to carry out that policy.

The DoDD effort began in March 1985 with a detailed review of the approved Guidelines which includes: defining significant terms, identifying critical events and time frames, and developing logical implementing procedures. The results of this review were provided to OSD who will specify the policy and coordinate with the Services in late FY 85. A similar process will be followed for preparation of the draft DoDI.

A second concurrent effort will involve collection of documentation on current training system development and acquisition policies and procedures. This effort will obtain applicable directives and documentation, and identify analysis/development/acquisition milestones, documentation, reporting, and approval requirements. This information will be used to gain an understanding of how existing mechanisms work



and how the guideline implementation methods can be accomplished with minimum disruption.

Following publication of the DoDD and DoDI, TDAC will continue to review the planning and acquisition process to identify possible ways to improve the initial Guidelines implementation. Based upon this continuing track, appropriate changes to the initial DoDD and DoDI will be suggested for review and coordination. During this process TDAC will develop an internal standard lexicon of key S/TD terms. The lexicon will be an essential element of this project to ensure standardization within TDAC data bases and documentation and to improve communications between TDAC and its users.

#### PROJECT 4: The S/TD Front-End Analysis.

° This project was established in response to a request for specialized TDAC support from the Deputy for Training Systems, ASD, Air Force. The Air Force is currently defining a series of approximately 12 specialized analysis processes which they plan to integrate into a systematic methodology for the front-end-analysis (FEA) of the Advanced Tactical Fighter (ATF) program. They have requested TDAC's assistance in the area of data base management, data reduction, and limited data collection/validation within the six specialized analysis processes identified below. Specific kinds and levels of TDAC support for each of these Air Force analysis efforts are currently being defined.

- \* Mission Analysis
- \* Comparability Analysis
- \* New Technology Assessment
- \* Human Factors Analysis
- \* Training Effectiveness Analysis
- \* Computer Data Bases

° It is recognized that the specific Air Force FEA methodology addressed in this project may have broader application within the Air Force and within other Services. As the project evolves, other Services will be invited to examine the specifics of TDAC's involvement in this FEA process and to participate with TDAC in similar projects supporting their specialized FEA requirements. The short-term benefit of this project is direct support to the Air Force related to a current FEA problem. The longer term benefit is the potential for assembly of a DoD data base to assist all Services with emerging FEA efforts for S/TDs.

#### PROJECT 5: The Improved S/TD Data File.

This project is a longer term effort to develop an optimal data base that contains data on both fielded systems and those in the planning and/or acquisition process. Actual data collection for this effort will not begin until late FY 86 or

early FY 87 and will borrow heavily from the "lessons learned" and the data collected during the first four projects. OSD, Service, industry, and academic efforts directed toward improved S/TD performance measurement and training effectiveness will be monitored starting immediately. Information gained will be used during definition of the improved S/TD data file.

The concept behind this project is to define and refine specific long-term data requirements and to work with the Services and OSD toward developing information to support these requirements. While the exact structure of the project cannot be specified at this time, we envision that the improved S/TD data file will collect enhanced information on previously identified systems and new systems as they proceed through the planning and acquisition phases and are fielded. This project will fill out the data elements on existing and newly fielded systems to support the long-term goals of the S/TD project and to support new user questions/issues as they arise.

#### D. CRITICAL QUESTIONS AND DECISION POINTS

1. What are the major data bases, their contents, and relevance to the goals of the S/TD program?
2. What are the consistency, reporting points, and availability of data on S/TD in DoD and Services planning and acquisition processes?
3. How much data exists but is not resident in data bases or other readily accessible forms (e.g., documentation) and what are the feasibility vs. importance considerations of collecting these data?
4. What are the appropriate limiting measures for selection of systems to be included in the S/TD data base?
5. What data elements should be included in the data base?
6. What criteria should be used to collect, sort, and prioritize user questions and applications for the data base and other products of the program?
7. How should the data base be structured for optimum responsiveness to user questions?
8. What are the quality, reliability, and validity of all data sources?
9. What procedures will be used for data collection, initial data base development, data base expansion, and long-term planning to incorporate additions and updates?
10. What are the sources, reliability, and types of cost and cost vs. effectiveness data to be included in the data base?

11. What policies and procedures will be used for collecting and releasing data and information?

#### E. IMPACTS

Short-term results will provide products for use within and across project areas, and as stand-alone products to meet the goals of the S/TD program. Specific short-term results will be:

1. A draft DoDD to implement OSD "Guidelines for the Development and Acquisition of Training Simulators and Devices".

2. A draft DoDI to promulgate implementation procedures for the OSD "Guidelines for the Development and Acquisition of Training Simulators and Devices".

3. A library of DoD and Service planning and acquisition directives for S/TDs.

4. A summary of S/TD data bases with an assessment of each.

5. A summary of DoD, Service, and other data bases for S/TDs in the planning and acquisition cycles.

6. Specified data assistance to the Air Force for the ATF front-end analysis project.

7. The first increment of the initial S/TD inventory.

The primary long-term result will be a current, up to date source of S/TD information available to users and sponsors. This information will be readily accessible, able to be cross-referenced, and keyed to specific needs of users and sponsors. Specific long-term results will be:

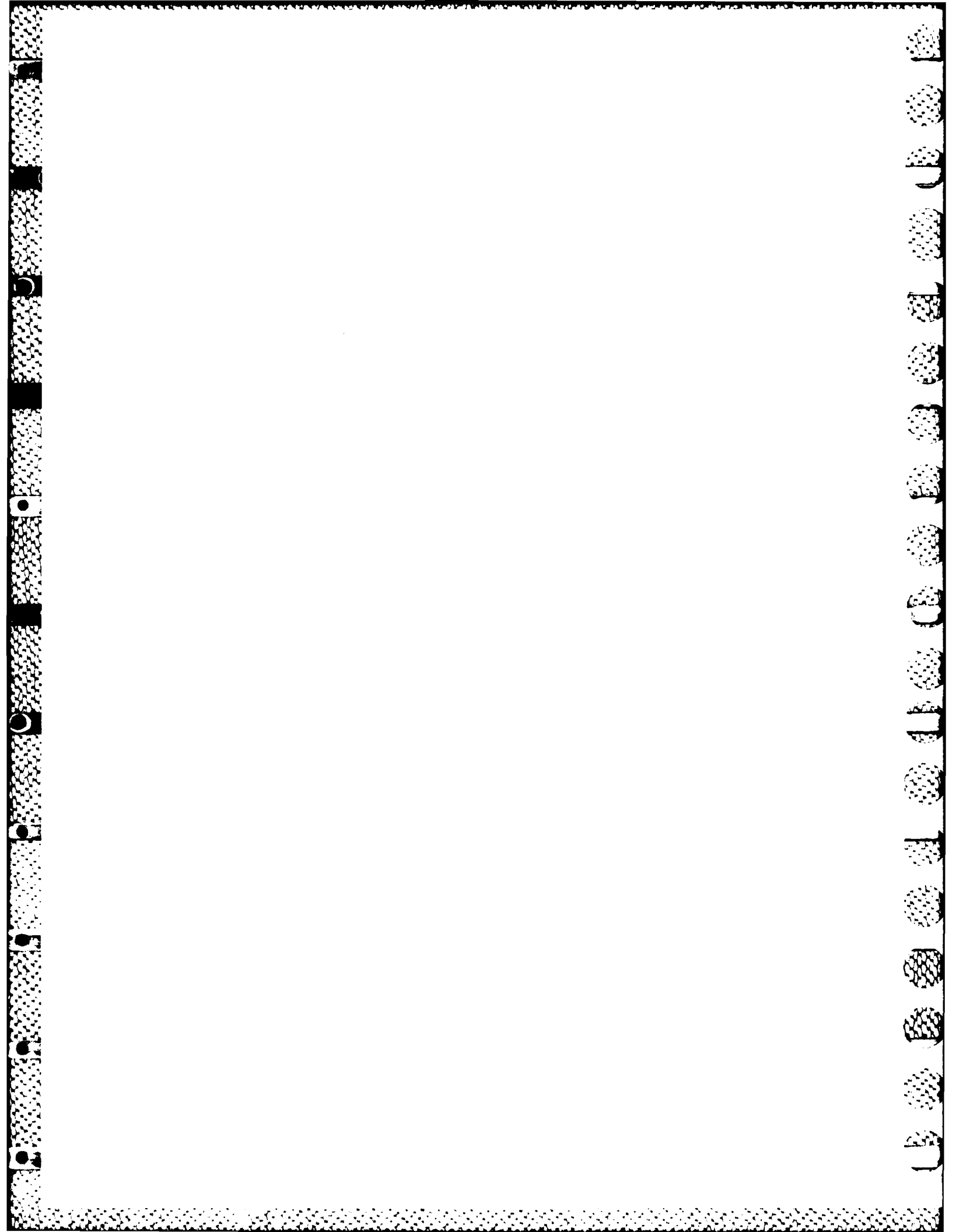
1. An inventory of S/TDs in use.

2. An inventory of S/TDs in planning and acquisition.

3. Ongoing evaluation and update of the DoDD and DoDI as required by OSD.

4. A comprehensive S/TD data base. This data base will contain enhanced information on S/TDs in planning, acquisition and use.

5. A procedure to respond efficiently to user requests.



## 7. RESERVE COMPONENTS (RC) OCCUPATION BASED FILE (TDAC POC: Mr. Gary Green)

### A. BACKGROUND

The RC use essentially the same strategies for training of individuals as the active components. In many instances, these training strategies are inappropriate for the RC. For example, when active and reserve service members move up in grade, they frequently assume supervisory positions over personnel in skills other than their own. The limited training time available to RC members provides little, if any, opportunity for these supervisors to acquire expertise in other than their own skill. This tends to limit the RC member's capability to train and supervise subordinates, especially in technical skills. Current solutions to this problem do not always work well in reserve components. For example, in the Army the necessary technical and leadership training for mid- and senior-level supervisors is generally provided through formal schools. Historically, RC attendance at these schools has been very limited, indicating that the required training may not be reaching RC members.

The RC Occupational File will be configured to permit analysis of RC training issues such as training strategies that best suit the needs of reserve components. It should also provide an integrated data base for analysis of other RC training issues already identified by users such as training evaluation procedures for individuals, quality of skill-related training, resource allocation by skill vis-a-vis criticality of the skill, refresher and supervisory training needs, incumbent skill levels, training decay rates, status of training for a particular skill across like units or within a geographic area and training readiness of individuals within units. All issues share the common thread of requiring data specific to occupations.

### B. SPONSORS

OASD(RA), USCINCPAC, and USN(CNET).

### C. PLAN OF ACTION

The RC Occupation Based File will capture occupation data unique to the Reserve Components. A second occupation file, maintained by the Individual Training Division of TDAC, will contain data common to both active and reserve components. Minimum data will be duplicated between the files. File linkages and cooperative data collection efforts will insure that relevant data is available to both.

Development of the RC Occupation Based File will follow the outline of the TDAC General Plan of Action with continuous user

interaction. Peaks of user involvement will occur early in each developmental, design and data collection activity and as each activity nears completion. The initial plan is to undertake file development sequentially, one Service at a time. The first step will be to conduct a detailed background review of data requirements for each Service and determine data availability. A prototype data file will then be developed.

The order in which service files will be developed is fixed by an ongoing OASD(RA) contract with Logistics Management Institute (LMI). This contract is documenting current systems and strategies to train and sustain technical logistical skills in the reserve components. TDAC has a second contract with LMI that will build on and use the work done for OASD(RA). This second contract will review primary service data files that pertain to RC occupations, recommend a prototype RC Occupation Based File and develop data collection plans for each service. The Army prototype file (combining Army National Guard and Army Reserve data) will be developed first. The second prototype file, for the Air Force reserve components, will be developed by modifying and expanding the Army prototype to accommodate unique Air Force data needs. Navy and Marine Corps files will follow in a similar manner.

The initial in-house background review will involve literature searches and queries to users to identify relevant data bases. These data bases will then be cataloged and evaluated for their usefulness to the RC project. A catalog of data elements that could form an "optimum" file will also be developed to aid in defining the limits of the file and the hardware support requirements.

When sufficient information has been developed in the background review, work will begin in-house to design a data base framework responsive to user needs. This framework will become more detailed as products from the LMI contract are delivered. The framework will also serve to guide the LMI prototype design. Data collection will begin concurrently with the final stages of prototype development, focusing on available data and using the least intrusive collection means possible. Development of the file for the Air Force and other Services' reserve components will be very similar to the Army process. These files should be phased at intervals of six to twelve months, based on resources.

As with most TDAC data bases, the RC Occupation Based File will be a living data base, expanding and changing to match the changing user requirements. It is anticipated that this evolution will begin even before the initial data collection effort is complete and will continue for the foreseeable future.

#### D. CRITICAL QUESTIONS AND DECISION POINTS

1. How centralized and how automated are the data of interest?
2. What quality and quantity of data is available on incumbent training histories, annual training periods, inactive duty training periods, etc.?
3. What are the quality and availability of RC performance data by SSN?
4. What is the availability of resident courseware descriptions peculiar to RC training?
5. What quantity of data must be automated?
6. What is the availability of other data bases that will describe RC units in terms of the quantity and quality of each skill required, wartime missions and wartime support relationships?
7. What is the degree of turbulence in descriptions of courseware, entry qualifications, etc.?

#### E. IMPACTS

RC occupation data is currently scattered between active component (AC) and RC data bases and within several data bases in each component. Initial inquiries show that useful data is located in dispersed systems and are generally not automated. Integration of much of this decentralized data into an RC Occupation Based File will provide the policy and management communities with better access to existing data. This in turn should provide better information for decisions on reserve component training issues.

Short-term TDAC products will include prototype data files for reserve components of the Army and Air Force. These files should be of value to reserve component trainers and policy managers. Longer term products will include prototype data files for the other Services and expanded files for the Army and Air Force. In addition to the data discussed above, the expanded files should contain data on annual training, inactive duty training and individual performance data. Data availability and access remain unknown at this point and may have a significant impact on file development.

8. RESERVE COMPONENTS (RC) EQUIPMENT, FACILITIES  
AND SUPPORT FILE  
(TDAC POC: Mr. Gary Green)

A. BACKGROUND

The Reserve Component (RC) Training Facilities, Equipment and Support File will provide an integrated data base devoted to reserve component and mobilization training issues. This data file can be used to address the following types of issues already identified by users: training degradation caused by shortages of critical items of equipment; availability of tools, test sets, special tools, training devices and simulators; availability of a full-time support workforce; availability and use of training devices and simulators by RC units; time-phased demand for training areas and ranges if mobilization occurs; and facility and equipment shortages that will restrict the surge in training base capacity at mobilization. These issues share the common thread of requiring information on availability of training-related facilities, equipment or support.

The following descriptions show the type and complexity of the training environment with which this file is concerned:

1. The quantity of mission essential equipment on hand in many reserve component units is considerably less than the stated requirement. Some RC logistical units are also assigned wartime support missions that require special equipment, tools and test sets different from those which the units have on hand. Equipment shortages and mismatches such as these may prevent some RC units from training for tasks critical to successful mission accomplishment in combat. Little data is available in an integrated file that can relate equipment shortages to training.

2. In a related problem area, plans call for units and individuals of the reserve components to augment existing training bases during mobilization. This should provide a surge in training capacity in an effort to meet the trained manpower requirements of mobilization. Facilities and equipment planned for this training surge may not be sufficient to train the required number of personnel in the available time. Analysis of this problem has historically been hampered by a lack of accessible data.

B. SPONSORS

OASD(RA), OASD FM&P(MP&R) and HQ USMC.



### C. PLAN OF ACTION

When fully developed, the RC Facility, Equipment and Support File will provide a comprehensive data base documenting pre- and post-mobilization equipment, facilities and support requirements for RC training. It will contain data on most RC training support topics to include the full-time support workforce. As user needs cause the variety and quantity of data in the initial file to expand, it will be possible to address each of the currently identified user issues. This data base should significantly contribute to better understanding and resolution of training support issues in the reserve components. The file can also be used to address mobilization issues such as questions related to the expansion of the training base at mobilization and the post-mobilization, pre-deployment training requirements of mobilizing reserve component units.

Some of the data in this file will be linked to or integrated with files in other Training Data and Analysis Center (TDAC) divisions. For example, data on most RC ranges will be included in the Collective and Joint Training Division's range directory data base. The RC Facilities, Equipment and Support File will maintain range data only for those RC ranges or unique RC data elements not in the directory. Linkages between the range files will provide access to the common elements. Joint collection efforts between the divisions will insure compatibility of common elements and prevent duplication of data. RC facilities and installations will be similarly related to the installations data base maintained by the Data Integration and Analysis Division.

#### PROJECT 1: Assist with MOBTRAC

The first project in this topic area will be to track and support an ongoing OASD(FM&P) contract effort that will develop a Mobilization Training Capacity Requirements Determination System (MOBTRAC). This model will be available to OSD and to the Service concerned to examine mobilization training base issues. The contractor supporting the OSD effort will develop MOBTRAC Service models and data bases, beginning with the Army. The Army model and data base should be delivered about end FY85. Other Service models and data bases will be delivered at yearly intervals.

TDAC will house and maintain the completed MOBTRAC models and data bases. These data bases will contain information on resources such as manpower, facilities, equipment and ranges for both active and reserve units and installations. Mobilization plans and mobilization training requirements will also be included.

## PROJECT 2: Prototype Development

The second in-house project will be to develop a prototype file using MOBTRAC as a start point. Information from the MOBTRAC data bases is expected to provide a framework of data elements and data descriptions for an RC Facilities, Equipment and Support File. This framework can be expanded based on user needs into a prototype file for all Services. A catalog will also be constructed that documents existing RC support data bases and lists data elements that could form an "optimum" data file. The "optimum" data elements will be matched with existing data bases to determine availability. By capitalizing on the MOBTRAC framework, the prototype data base design should be completed with minimum resources. Data collection plans for the prototype file will be designed to collect required data as unobtrusively as possible and at no cost to the Services. Data files will be constructed similarly for each Service's reserve components.

TDAC will expand the support file from the prototype by adding additional and more detailed information, again based on user interaction to define data needs. For example, it is expected that user needs will include inventory data on equipment critical to RC training. Inventory information on some equipment will be resident in the MOBTRAC framework and in the prototype file. Expanding the number of items of equipment included in the mature file should be relatively simple if the data is made available.

## PROJECT 3: Technology Transfer to the RC

One long-term project will begin by monitoring the Army Research Institute (ARI) Reserve Component Technology Transfer effort which is discussed in the TDAC technology transfer topic area. This project will provide a set of results and/or technologies that will most benefit the reserve components. As these results are developed, they will be transitioned to the Reserve Integration Division of TDAC for further information, update and data tracking. In two to three years, the data from this effort will be rolled into the RC Support File as the basis for a Reserve Component Training Technology File.

In time, the RC Facilities, Equipment and Support File will expand to include data on such RC topics as unit training programs, unit performance information, and the capability of installations to meet the post-mobilization training needs of mobilized RC units. Based on user requirements already identified, separate files will probably be required for issues such as mobilization data, training equipment data, RC technology transfer, and other RC training support data.

#### D. CRITICAL QUESTIONS AND DECISION POINTS

1. What are the major items, tools, test sets, etc., considered by Services to be critical to RC training?
2. What are the availability, quality and level of aggregation for data on reserve component training devices, simulators, ranges, training areas and other support facilities and equipment?
3. What are the availability and quality of data on post-mobilization unit training requirements, on unit training during annual and inactive duty training periods and on measures of training performance peculiar to the RC?

#### E. IMPACTS

Short-term products will include a prototype RC support file for the Army and reports from the Army MOBTRAC data base. Long-term products will include integrated files for reserve components of all Services that include data on critical training equipment such as tools, test sets and devices; full-time support programs; active/reserve training associations; regional training centers; and reserve component ranges, facilities and training areas. Other products include data files to describe reserve component post-mobilization training requirements and reserve component unit performance data.

9. INDIVIDUAL AND UNIT PERFORMANCE  
MEASUREMENT FILE  
(TDAC POC: LtCol Bert Itoga)

A. BACKGROUND

The relationship between training experience at schools and in units and subsequent on-the-job performance is of fundamental importance to the training community. Specifically, users identified the following issues for data collection efforts: maintenance of skills (both individual and unit) during extended non-training time periods; effect of training on unit combat readiness; determination of performance measures for new job requirements, and development of methods for linking individual and collective job performance data bases. All of these requests highlight the critical need within the Defense training community for: (1) valid and reliable performance data, and (2) links between performance data and individual and collective training experiences. Performance data is the key to analyzing the effect of different training strategies on actual job performance over time.

A traditional problem for the DoD manpower, personnel, and training manpower has been the inability to measure "job performance". The methodologies and technologies being developed in the Joint-Service Job Performance Measurement (JPM) research and development (R&D) effort address this problem. The JPM work should provide data relevant to manpower, personnel, and training issues. It promises to provide excellent "tools" for collecting required individual job performance data.

In addition, extensive data now appear to have potential as valid performance indicators. Examples of data sources include: range performance data, records of field-training activities, maintenance records, and embedded performance systems. Existing data sources need to be identified and evaluated to determine their validity as performance indicators. Similarly, existing unit performance data collected from ongoing range, exercise and readiness evaluations may have utility as performance indicators. These data sources, too, must be identified and evaluated. The sensitivity of performance data is recognized. Appropriate security measures will be developed with the Services to control the use and release of all performance data.

B. SPONSORS

OASD FM&P(MP&FM), OASD FM&P(CPP&R), HQ USA, HQ USAF, HQ USMC, USCINCEUR, ITRO.

### C. PLAN OF ACTION

The Training Data and Analysis Center (TDAC) will undertake the development of the Individual and Unit Performance Data File with four separate projects.

#### PROJECT 1: Prototype Development

The first project will be to work with the Joint-Service JPM effort to develop a prototype data base system that effectively integrates the Service-designed performance data collection projects into a common system. TDAC will work closely with the JPM Working Group to develop acceptable data formats, establish coordination procedures and obtain agreement on ground rules and timetables for data transfer. Working with the Services, a common data base will be designed to maintain JPM data produced by the Joint-Service project. The design effort will identify potential data elements, specify standardization procedures, specify data transmission and storage formats and describe any special hardware or software requirements to facilitate communications with other data bases. Development of the common system will also require that policy and protocol be established for release, safeguarding use and institutionalization of JPM data.

#### PROJECT 2: Identify Existing Sources

The second TDAC project will be to work with the Service R&D laboratories and agencies to identify existing sources of unit and individual performance data for TDAC collection and storage. TDAC has already reached informal agreement with three laboratories to monitor and maintain data resulting from specific laboratory research projects.

The first of these efforts is an Army Research Institute (ARI) project to identify unit performance measures that will have utility for evaluating unit performance at both the National Training Center (NTC) and the home station. This research will seek to establish models of task force performance; define potential measures of performance and indices of effectiveness; determine data availability from NTC; and, when appropriate, develop data extraction routines, procedures and algorithms. This work will also develop field measurement techniques and data collection procedures for home station activities. TDAC will monitor this research effort and act as a repository for maintenance of relevant data when the Army initiates transfer to the TDAC data file.

The second project is being conducted by the Air Force Human Resources Laboratory (AFHRL) as one of several training effectiveness issues being examined under the umbrella of their Training Effectiveness Plan. TDAC will monitor AFHRL efforts to develop aircrew mission performance measurement systems. This

includes experimentation with aircrew performance during air-to-air and air-to-surface attack missions in both simulators and operational equipment. Initial operational test and evaluation (IOT&E) projects and other issues from the AFHRL Training Effectiveness Plan will also be monitored as appropriate. As these efforts progress, TDAC will work with AFHRL to develop data interfaces that will permit TDAC to accept and maintain the performance data resulting from these research efforts.

The third project is a part of the Joint-Service Job Performance Measurement project being conducted by the Navy Personnel Research and Development Center (NPRDC). In this research effort, supported in part by TDAC, NPRDC will seek to establish measures of individual performance in simulators as surrogates for performance on-the-job with operational equipment. TDAC will monitor this research and, in accordance with guidelines agreed to by the Chief of Naval Operations (OP-11) and TDAC, will collect and maintain resulting performance data.

#### PROJECT 3: Develop Additional Sources

The third major project to be undertaken by TDAC will be an effort to compile a list of additional measures (beyond those covered above) which have potential utility as indicators of individual and collective performance. This list will be developed primarily for data collection sources identified in visits, discussions, etc. Two examples of the types of data sources already recorded are as follows:

1. OSD(PA&E) is sponsoring research to relate resources for training to ship readiness. Subtasks of this research will identify existing data to support the necessary analysis, propose alternative structures where data is lacking and produce prototype models that relate resources for training to readiness for Navy general purpose ships. Much of the modeling and data work conducted to examine "readiness" may also be applicable to unit performance measures.

2. The Army is regularly collecting extensive data on performance of tank crews at the Grafenwoehr training range in Germany. The data is a record of the round-by-round outcome of live-fire exercises for each crew firing on the range.

Numerous other data collection activities are being conducted that could yield useful data relevant to performance evaluation. As these activities are identified and described, the list will be submitted to appropriate agencies for review and endorsement with a request to expand the list by identifying other known data sources. As appropriate, and as agreed by sponsors, data from these studies will be archived at TDAC.

#### PROJECT 4: Army Signal School Individual Performance Data

The fourth TDAC project will be initiated in conjunction with the U.S. Army Signal School. The Signal School has archived and is collecting individual performance data from institutional communications training which includes the use of technologies such as interactive videodiscs. TDAC will assist the School in designing a revised data collection system and reformatting historical data to focus on critical data elements for measuring performance. The data to be collected will come from several different courses and will span an array of instructional methods from traditional to the most high-tech of the new technologies. TDAC will maintain the data in a format that will permit the School to conduct analysis of the trade-off opportunities among instructional methods. As this project progresses in the Army, it can be expanded to communications skills in other Services. The mature communications project should serve as a prototype for data collection in other occupational areas DoD-wide.

As part of the overall effort in this topic area, TDAC will support and assist the Services in institutionalizing JPM performance measurement technology and systems. This will provide a broader range of applications for Service use of performance measurement methodologies and information.

#### D. CRITICAL QUESTIONS AND DECISION POINTS

1. Will the Services support long-term development of measures and subsequent data collection on occupational areas beyond those covered by the ongoing Joint-Service JPM Project?
2. What are the availability, quality and level of aggregation for existing and proposed measures of individual and collective performance?
3. Have the validation studies been done to assess the accuracy and reliability of unit performance measures? How good are existing data?
4. Is access to existing data bases restricted for security purposes, particularly for collective measures?
5. Can agreement be reached on the validity of the proposed list of additional performance measures?

#### E. IMPACTS

A central repository of performance data bases will provide the Services with a common file for cohort analyses and cross-referencing. Accurate, reliable and timely performance data can provide large potential payoffs in several communities. The communities include personnel (selection,

classification, retention, utilization, and promotion), training (training effectiveness, course content/delivery decisions), operations (continuation flying, combat readiness/effectiveness, unit performance evaluation, joint-operations effectiveness) and weapons systems acquisition.

Short-term products will include specifications for the prototype JPM data base. Prototype unit performance measures and pilot performance measurement data from simulators and training devices should be delivered from the second project. A list of performance measurement data sources as identified by TDAC should also be a short-term product. A data collection system that focuses on critical data for performance measurement will be developed in conjunction with the Army Signal School.

In the longer term, TDAC files should be available for unit and individual performance measures. TDAC individual files should include job performance data of first-term personnel developed by the Joint-Service JPM project.



10. TRAINING SYSTEM PERFORMANCE DATA  
(TDAC POC: Lt Col Chuck West)

A. BACKGROUND

TDAC has been asked to develop and maintain performance data files which can be used to determine how well alternative training systems meet their training mission, i.e., how well they train what they are supposed to train. The related issue, (Is the training requirement defined for the system appropriate?), is considered outside the scope of this initial effort.

The Defense Science Board (DSB) Summer Study on Training and Training Technology noted that pilot performance data from flight simulators can be used as reliable indicators of the capabilities of simulator-based training. The DSB noted the need for continuous cross-service data collection and analyses, and recommended increased development and use of embedded performance measurement systems. As stated in their report, "The key to getting wide support for training technology is to prove, through the availability of hard data, how well new training methods work and where they work best".

The training system performance data base should provide the capability for sponsors to assess differences in training outcomes using simulators, computer-based instruction, and equipment such as Multiple Integrated Laser Engagement System (MILES) and Conduct of Fire Training System (COFTS). Measures of individual and collective performance will be required for each training system or device considered. As an example, measures of average training time necessary to achieve a given level of skill using various combinations of simulators, part-task trainers and operational equipment could be appropriate data for this file. This data base will permit analyses of the following issues already identified to TDAC by users; preferred training mix/sequencing of simulators and operational equipment, cost-benefit ratios for existing systems, skills best trained with simulators/training devices versus operational equipment, and the training value of more-versus-less-sophisticated simulators and devices.

B. SPONSORS

OASD FM&P (MP&FM), USCINCEUR, HQ USAF and ITRO.

C. PLAN OF ACTION

The major goal of this effort is to identify and collect training system performance data. The process has been separated into two related projects.

### PROJECT 1: Definition of Performance Measures

The first project is to develop candidate measures of training system performance which are both valid and attainable in the training environment. The Service laboratories--Navy Personnel Research and Development Center (NPRDC); Air Force Human Resources Laboratory (AFHRL); and, the Army Research Institute (ARI) will be requested to participate in a coordinated program. Initially, each laboratory will independently develop a research plan for a project that would define the "best measures of system performance." This research plan would address such issues as: criteria for performance measures for each type of training; relative availability and cost of the measures; and the type of issues surfaced by the device effectiveness study done by Rose and Wheaton for ARI. These plans will be reviewed, and the laboratories will independently proceed with the R&D projects. Quarterly update reviews will be held during the research process to ensure that the candidate measures are complete, relevant and collectable in the training environment. Upon completion of the R&D projects, TDAC will work with the labs to develop a draft summary paper with recommendations. The draft paper will be widely circulated within the training community for comments/concurrence and revised accordingly. The final document will be used by TDAC to guide data collection and integration in this topic area.

### PROJECT 2: Prototype Data Base from Existing Sources.

Project 2 recognizes that past R&D efforts have developed various operational performance measures that are in use and producing information today. TDAC will identify these existing data, data bases, and potential data sources. For example, one source of data may be embedded performance measurement systems in which data is captured during a training session. The primary means of identifying these sources will be discussions with representatives of training organizations and by reviewing descriptions of existing training media and training management systems. Other sources of data may be identified as a result of data file development by other TDAC divisions. Measurement systems embedded in operational ranges, automated performance measurement systems embedded in simulators, and Computer Based Instruction (CBI) are examples of sources of data that may be identified by other TDAC Divisions. Additional sources of data may be identified by ongoing and planned efforts outside of TDAC. For example, the Automated Simulator Test and Assessment Routine (ASTAR) Programs being pursued by the Naval Training Equipment Center (NTEC), and the Training Systems Development Model developed by ARI both contain a data collection phase.

As data is identified, the baseline developed in the first project will be used to establish collection priorities and to structure appropriate data file procedures and interface

mechanisms which will permit the integration of individual performance measures into an overall system performance measurement.

D. CRITICAL QUESTIONS, DECISION POINTS, DATA COLLECTION

(1) To what extent have valid training system performance measures already been identified?

(2) Are existing data collection mechanisms being used? If so, in what form are available data maintained and at what level are the data aggregated?

(3) How reliable and valid are existing training system performance measurement systems?

E. IMPACTS

This effort will identify readily accessible measurement systems which, with sufficient data, can be used by sponsors to do the following:

(1) Determine the rate of skill acquisition, sustainment, and retention with various combinations of training equipment.

(2) Provide information which can assist in determining true cost-benefit ratios for the use of training simulators/devices in lieu of actual equipment.

(3) Identify skills best trained by the use of training equipment (taxonomy of skills best learned).

Anticipated users of this information are the Service R&D and training communities, agencies responsible for the development/acquisition of training devices, and OSD training budget advocates.

Short term products of this effort will include a description of device/media performance measurement systems as identified by the R&D Laboratories, and a summary report which recommends procedures for the establishment of a common data file. Long term products will include a TDAC maintained simulator and training device/media performance measurement file.

11. TRAINING COSTS  
(TDAC POC: LTC Michael Bryant)

A. BACKGROUND

During a time when cost consciousness is a major concern and training cost growth must be understood and justified, credible training cost information is a necessity. This information is particularly important for analyses which attempt to judge the benefits of additional expenditures. A great deal of training cost information is available. However, the assumptions and methods used in developing the data is often sparsely documented and the applicability of the data to a particular analysis is frequently questionable.

The Military Services and OSD maintain separate data systems that report training cost information at various levels of aggregation. These independent systems support different functions ranging from the cost estimates for a proposed training device to the exhibits supporting the Five Year Defense Plan (FYDP). Nevertheless, the available information often cannot be used for many analyses because of the lack of a common data framework that identifies the precise nature of the costs included in a given system. Thus, trade-off analyses of training programs, courses or devices are often constrained as is the development of cost estimating relationships.

No easily accessible central source of Defense training cost data exists. Neither does a central directory service which could provide information on the many cost data bases already established. Filling the void, however, does not require the imposition of a standard costing methodology across all Services. The identification and description of unique methodologies within a common framework should suffice. Similarly, a single data base need not exist. Different sets of data can be collected depending on the nature of the analyses to be conducted.

B. SPONSORS

OASD(C), OASD FM&P(CPP&R), OASD FM&P(MP&FM), HQ USA,  
USAF(ATC), HQ USMC, USN(CNET)

C. PLAN OF ACTION

Initial efforts on this topic area have tapped recent OSD, Interservice Training Review Organization (ITRO), and Service-sponsored research and have focused on validating a global framework for designing training cost data bases. This framework structures training cost information into three distinct but interrelated levels of data as shown in Figure 1.

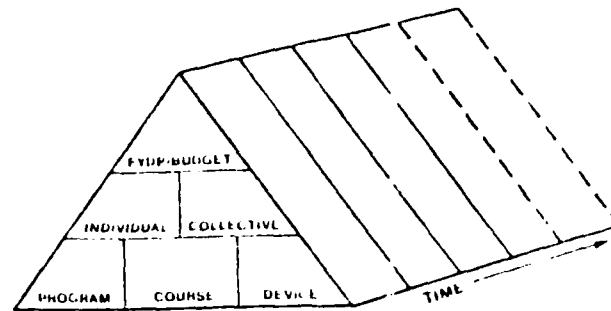


Figure 1 TRAINING COST DATA

The topic area is divided into three projects that parallel the three hypothesized echelons of data:

- . Project 1 - FYDP/Budget Level Training Cost Data Base
- . Project 2 - Individual and Collective Level Training Cost Data Base
- . Project 3 - Program, Course and Device Level Training Cost Data Base

All three projects will begin simultaneously but will progress at different rates depending on the maturity of previous research efforts and the availability of data. For example, ITRO has already spent considerable effort reviewing individual training cost methodologies. Similarly, OSD has sponsored research to develop a Cost Element Structure (CES) for use in trade-off analyses of training programs, courses, and devices. On the other hand, little effort has been made to provide a topline training trend analysis capability or a comprehensive estimate of overall training costs. A short term objective (FY85 and early FY86) will focus on providing rudimentary trend analysis capability. A mid-term objective (FY85-88) will focus on training cost data related to training an individual in a specific occupational area. In the long term (FY88 and beyond) collective and joint training cost information will receive more attention. This is not to imply that collective and joint training is not important or will be ignored in the short term, but only that, at this point in time, it appears that more user interest is directed to the individual training area.

A major challenge is found in the third project which involves identifying, collecting and normalizing (if possible) training cost data related to programs, courses, and devices. More importantly, in the long term, it will necessitate examining alternative life-cycle costing frameworks and determining their credibility and usability.

#### PROJECT 1: FYDP/Budget Level Training Cost Data

This project encompasses the design, development, and maintenance of a longitudinal data base containing the cost elements and amount spent by each DoD component for each individual and collective training category. The first step will require the identification of existing training cost data, to include sources such as the FYDP/Budget, recent GAO/CBO reports, and recurring Services or DoD reports. A critical element of the FYDP/Budget effort will be to identify the POM/Budget exhibits and the specific content/definition of the data in the FYDP. Next, a catalog of existing and proposed training cost data bases will be developed, as well as a listing of the directives, standards, and regulations guiding the development, collection, and dissemination of training cost data. Finally, available longitudinal training cost data will be consolidated into a data base which will permit the user to analyze trends in program elements and to allow for Defense-wide aggregations of training cost information. All data in this data base will be reproducible (i.e., the source of the data will be retained) and will be cross-checked using common sense edits and comparisons. In the longer term, new data bases, including those discussed in Projects 2 and 3, will become available and will enrich the total training cost data.

#### PROJECT 2: Individual and Collective Level Training Cost Data

This project will augment the many previous and current efforts of the Services to improve the reliability and credibility of cost data associated with training service members in military occupations. The first step is to identify and catalog existing and proposed training cost data bases which provide data on the fixed, and variable costs of all the general categories of resident individual training. Next, the cost analysis assumptions and methodologies inherent in each of the data bases must be documented, with emphasis on those related to a Service's requirement to fulfill particular mission objectives. Variations in costing methodologies are expected because of (a) differences in Service mission objectives which result in different training approaches, equipment, and other cost-related factors, (b) differences in Service training organizational structure and host-tenant relationships, and (c) differences in Service accounting and operational data systems. Finally, data must be collected, stored, and disseminated in a manner which not only supports the need for uniform application of accepted costing principles and techniques, but also recognizes that interservice cost per graduate comparisons are inappropriate without a thorough understanding of the non cost-related factors.

### PROJECT 3: Program, Course, Device Level Training Cost Data

This project requires the examination of cost data from a viewpoint similar to that of the weapons systems acquisition community. One of the first tasks is to select the best framework to guide the cost data base design. This will start with an examination of the appropriateness of the Knapp/Orlansky Cost Element Structure (CES)\* for calculating the life cycle costs of training programs, courses and devices. The major effort will center on reviewing the opinions of the user community about the general framework and determining whether data that "fits" the structure exists and is readily available. Next, limitations/omissions in the CES must be identified and, if feasible and appropriate, corrected. If deemed satisfactory, the Cost Element Structure must be demonstrated and evaluated using a sample project. The evaluation will include a comparison with other methodologies and an assessment of the possibility for including/combining the CES into or with other models. Finally, using whatever structure is selected, the longer term process of data collection will begin. The clear intent is to support users' requests as soon as possible by developing the formats and data transfer mechanisms. Initial emphasis will be given to readily available centralized data as opposed to system unique sources. Decisions on the collection of system-unique data will be made based on user priorities.

#### D. CRITICAL QUESTIONS

- (1) Sufficiency of information regarding the precise nature of the costs contained in existing systems?
- (2) Appropriateness of the Knapp/Orlansky Cost Element Structure for all cost data analyses?
- (3) Availability of unit training cost models/information?
- (4) Level of detail required for specific hierarchical levels and/or analyses?
- (5) Sufficiency of information with which to develop cost estimating relationships for training programs, courses and devices?

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\*IDA Paper P-1709 of November 1983, "A Cost Element Structure for Defense Training"

E. IMPACT

A centralized source of information on Defense training cost data and methodologies will be provided. This source will be segmented into three distinct but interrelated levels, namely: FYDP/Budget level, individual/collective level and program, course, and device level. Eventually a foundation for more useful and accurate cost effectiveness analyses will be available.



## 12. INTEGRATION OF DATA BASES (TDAC POC: Mr. Dennis Van Langen)

### A. BACKGROUND

TDAC data must be integrated into a cohesive, easily accessible structure that relates the data bases being developed in the individual topic areas. In addition these data bases must be linked to existing data systems including those dealing with occupational information, training costs, maintenance incident frequency, spare parts requirements, personnel performance, technical assistance reports, mobile training team reports, training readiness reports, and a variety of other training data issues.

Satisfying the demand for such an integrated data base encompasses the entire ADP spectrum from personal computers to large mainframes, from stand-alone systems to computer networks, from centralized to distributed data bases, and from the unclassified environment to a Top Secret processing arena. It also includes the establishment of effective data collection methodologies and user support policies appropriate to the training community. The projects in this topic area recognize these requirements and attempt to address them.

### B. SPONSORS

OASD FM&P(MP&FM), OASD(RA), ITRO, HQ USAF, CNO, HQ USA, USCINCEUR, OUSD(R&E), USN(CNET)

### C. PLAN OF ACTION

The integration of data bases and the establishment of the requisite ADP support is a key TDAC strategic initiative. It is mission essential and akin to obtaining proper physical facilities and to staffing TDAC with the requisite skilled personnel. By definition, the process must be dynamic and flexible so new tasks and data bases can be accommodated and lessons learned can be quickly implemented. The TDAC maintained data bases will reside on TDAC controlled government and contractor operated systems. The actual physical media may be printed reports, microcomputer diskettes, large sequential tape files or on-line mainframe disks. Regardless of the location or storage media, integration, quality control and accessibility must be the foremost considerations.

The three projects identified in this area include: ADP Requirements and Configuration; Preliminary Data Base Design; and TDAC Data Interface Operations. All three projects will progress simultaneously and will require close coordination. Planning must progress ahead of design, testing, and evaluation. Nevertheless, a certain amount of implementation is

necessary in the formative stages of TDAC's life if TDAC is to perform according to its charter.

#### PROJECT 1: ADP Requirements and Configuration

This project will develop a TDAC ADP Support Plan covering both the short and long term. The plan will provide guidelines for interorganizational relationships, ADP procurements, and data processing operational procedures. Three basic premises dominate the development of these plans:

- TDAC will not operate a massive computer center. Near term ADP support is best provided by both government and contractor vehicles.
- TDAC will not "reinvent the wheel". TDAC will make use of existing data systems by means of data extracts and access agreements.
- TDAC will insure appropriate levels of quality control and accessibility on all data released by or through TDAC.

The TDAC ADP Support plan will be developed in FY85-86, initially in skeleton format, and expanded as specific TDAC requirements are detailed. The first step will be to examine the requirements for data collection, storage and dissemination which are inherent in the other topic areas. Particular emphasis will be given to the user requirements. For example, if a printed report will suffice, no interactive system needs to be developed. Next, a review will be made of emerging ADP technology to determine its applicability to the TDAC requirement. In addition, a risk analysis program will be initiated in order to define data security and recovery procedures. An ADP Support Plan will be published in a format which highlights the dynamic nature of the document. The plan will include a requirements analysis, hardware and software specifications, configuration control, telecommunications environment, security considerations and staff training synopsis. It will contain provisions for operating in both an unclassified and classified environment including those supporting the Worldwide Military Command and Control (WWMCCS) Information System (WIS).

The precise requirement for a prototype system will be outlined in the document. Nevertheless, TDAC is already equipped with microcomputers designed to provide word processing, financial management, and prototype data base design capabilities. In addition, TDAC is currently testing and evaluating experimental communications links to potentially large data bases of interest such as those maintained by TDAC's sister center, the Defense Manpower Data Center (DMDC). The project will ultimately identify the hardware and software necessary for TDAC to perform its missions and develop the procurement documents and funding requirements necessary to implement the system.

## PROJECT 2: Preliminary Data Base Design

This project will focus on the overall design of the TDAC data base. This is not to imply that a single giant data base will be created, but rather to indicate that the totality of data collected and disseminated by TDAC will be integrated into some cohesive logical structure. Basically, this structure will be designed to answer queries about who we train, what we train, where and when training is/was conducted, how (what techniques/equipment) training was accomplished, how much it cost and how effective it was. Initially, this project will entail developing a data base or catalog of training and training technology related data bases. This catalog will provide overview information on all internal and external data bases used by TDAC and/or relevant to the training community. Subsequently, this project will develop the protocols required to establish compatibility between the data bases used within TDAC and those accessed by TDAC but maintained by other agencies. The project will also involve the review and evaluation of commercial software systems available for use.

## PROJECT 3: TDAC Data Interface Operations

This project encompasses the full range of user access to TDAC and TDAC's access to data suppliers. It includes interchange options such as printed reports, diskette exchange, magnetic tape transfer, terminal access and computer-to-computer links. Initially, the project will focus on the most expeditious means of providing information to TDAC's users which in the short term may be a printed report. In the longer term it may mean a transfer of TDAC data via an intermediate user file to a microcomputer being used by an analyst in the training community. Most importantly, this project will develop a "Modus Operandi" governing TDAC data access. These operating procedures will insure that individual and unit identification information is not released to unauthorized users. In addition, the "Modus Operandi" will establish classes of service and delineate access restrictions to TDAC's data. Drafts of this document will be forwarded to the TDAC users chain of command in FY85.

Ultimately, user requirements and TDAC's environment will dictate the need for a telecommunications interface with TDAC data bases. The architecture will revolve around the Defense Data Network (DDN) and its associated components. Initial telecommunications links will be achieved via commercial lines. However, later access will be accomplished through the DDN. This project will include all aspects of the TDAC telecommunications environment including hardware, software, and procedures. In addition, since some of the TDAC data bases will contain classified information, the telecommunications architecture must entail a secure transfer capability.

D. CRITICAL QUESTIONS

- (1) Appropriate levels of data processing and analytical support?
- (2) Availability of existing mainframe support and established data bases?
- (3) Proportion of ADP support required to be in a classified environment?
- (4) Effective use of state-of-the-art advances in the ADP field?
- (5) The key training elements which can serve as the major link for data base integration?
- (6) Privacy and exclusivity of data bases?
- (7) The need for systems compatibility?

E. IMPACT

An integrated data base, combined with appropriate hardware and personnel will form a TDAC Information Center. This Information Center will create and implement operational procedures which will provide rapid response to authorized training data inquiries. The quality and timeliness of this response directly influences TDAC organizational effectiveness and, ultimately, the effectiveness of user training organizations.

13. TRAINING INSTALLATION DATA BASE  
(TDAC POC: LCDR David Norman)

A. BACKGROUND

The tasks in this issue respond to the expressed needs of installations and base operations management to access training related information at the installation level of detail. One problem to address is the definition of acceptable measures to assess training installation utilization under both peacetime and wartime scenarios. This information is critical to assure the long term availability of the land, water, and air space needed to train our Armed Forces. As a corollary, training information is a significant variable in the rationale of base utilization. Furthermore, well-defined training space requirements will inhibit possible encroachment into departmental areas reserved for training. This data base should encompass all physical resources (personnel, equipment and facilities) associated with/assigned to a training installation in order to facilitate and allow the Services to optimize resource utilization. Also included should be those activities receiving or providing support as the host or tenant.

Recent initiatives such as the OSD Installation Data Base System contain many good items of data such as base populations, mission equipment inventories, acquisition costs and facility descriptions. However, key training related elements like range space, air space (both subsonic and supersonic), training capacities, and training area utilization are not in the file. This missing information is critical for addressing questions concerning the expansion or contraction of DoD training facilities.

Obviously, there is a high degree of connectivity between this issue and those concerning training ranges and the reserve component training facilities, equipment and support file. Initially, these issues will be addressed separately, but closely coordinated. The data files will be organized to allow linking and information sharing. One possibility, in the longer term, is a combination of these three data bases into a single integrated data base accessible to each interest area.

B. SPONSORS

OASD A&L(I), HQ USA, USN(CNET)

C. PLAN OF ACTION

The design development and operation of the Training Installation Data Base will be accomplished in two multitask projects which will require close coordination with Service representatives and OSD staff analysts. Such coordination will

be effected using the existing staff relationships both within the Services and between OSD and the Services. The first project will focus on reviewing and cataloging existing training data at the installation and training area level of detail. This first effort will provide the essential ingredients for data base design and definition of the key data elements. Project 2 will depend on an OSD/Service review and approval of Project 1 results and recommendations. This project will firm up the design and commence data base operation.

#### PROJECT 1: Review of OSD/Service Installation Data Bases

The principal task within this project will be to identify and catalog OSD/Service Data Bases. After a brief, broad review and discussions with installation representatives, the most promising candidate data bases will be selected for further review. TDAC will rely heavily on expert opinion within OSD and the Services for the candidate list. Requests will be made to obtain functional documents for each system and a schedule will be established to conduct on-site discussions where warranted. Information on each data base will be collected on the scope, size and function, the user activities, data flow including volume, data input/output (manual, automated), types of output (reports, displays, etc.), sensitivity, access, frequency of update, number of records, storage media, retention schedules, system descriptions, data base architecture, internal and external interfaces, value to training issues, and so on. Particular attention will be paid to those data elements that show promise in helping to quantify training resources, training areas, and measures of utilization. An immediate product of this effort will be a catalog (automated and hard copy versions) of installation data bases. The catalog will be designed to provide a quick reference to training installation information across the DoD. Concurrently, the most relevant and promising data systems will be selected for further detailed technical review. This review will contribute materially to the design and development of the final system.

#### PROJECT 2: Training Installation Data Base Development

The first task of Project 2 will fix the functional characteristics of the data base and produce a draft data base design. The results of this effort will be used to establish a mutual understanding between system developers and the user communities. This task will use Project 1 results and will specify the data base structure; identify key data elements and their sources; and, specify the proposed interface and required update cycles with other data systems. This task will be accomplished via a series of detailed discussions with the sponsors and managers of all participating data systems.

The second task will build the data base. This effort will include extracting readily available data from the source systems, installing conversion factors where needed and appropriate, correcting system defects, and printing standard reports. Careful attention will be paid throughout the development effort to minimize the operational impact on obtaining essential information that is not readily available from existing systems.

#### D. CRITICAL QUESTIONS AND DECISION POINTS

(1) Establishing internal/external interface with other support data bases.

(2) The selection by the appropriate type, number, and service of US Military Installations to be included in the Training Installation Data Base.

(3) Defining standard measures of utilization for training areas and resources.

(4) Sufficient type, quantity, consistency, and timeliness of data to meet system requirements.

(5) Methods of obtaining critical data which cannot be obtained on-line.

#### E. IMPACT

The ultimate Training Installation Data Base will offer OSD and Service analysts a system, previously nonexistent, that centralizes Joint Service information concerning the availability and capability of training resources at U.S. Military Installations. As a consequence, it enhances the centralized planning and provides a macro-level analysis tool that gives a total force picture. The structure and depth of the data base will allow users to assess across the DoD installations infrastructure a number of issues unique to training resource utilization and provide a statistically sound methodology for identifying training resource problems and substantiating funding priorities within the training base area.

#### 14. COMPUTER-BASED INSTRUCTION (TDAC POC: Mr. James Young)

##### A. BACKGROUND

In recent years there has been a rapid growth of activity in the Computer-Based Instruction (CBI) area from the research and development (R&D), acquisition, and training communities. It is generally agreed that the use of computers in training can reduce overall training time. However, some basic questions have not been given adequate attention. What factors influence the successful use of computers in training? How much does CBI cost? What hardware and software are available? What subjects can be taught using CBI?

The issues submitted by TDAC users share the common thread of requiring data/information on successful and unsuccessful CBI applications. TDAC users have requested data on selection criteria, successful developmental models, lessons learned, methods for determining life-cycle costs, and effective uses of CBI with videodisc technology. The major goal of this effort is to provide users with information pertaining to what classes of CBI are available now and how they can be used in the most cost-effective way.

##### B. SPONSORS

HQ USMC, ADCOM, USAF(SAC), CNO, HQ USA, ITRO, HQ USAF, USN(CNET)

##### C. PLAN OF ACTION

Four projects form the initial effort in the CBI area:

1) CBI Definitions & Policy; 2) Catalog of CBI R&D; 3) Lessons Learned; and 4) CBI System Catalog. Collectively these projects address the need for data on existing CBI systems, factors influencing the successful use of CBI, tools for managing CBI, and R&D projects with potential benefit to the CBI user community. The projects will be accomplished concurrently so that mutually supporting data developed in one project can be used in others. All projects will be defined and closely coordinated with the Services to ensure smooth working relationships for data exchange.

These projects are basically short term efforts structured to provide data and information to the DoD training community. The data and mechanisms provided through these short term efforts should allow trainers and training managers to improve the control of their overall CBI applications. These projects will be completed by the end of fiscal 1986. Further efforts by



TDAC in the CBI area will depend upon direction from these trainers and training managers in the DoD training community.

PROJECT 1: CBI Definitions & Policy.

The purpose of this project is to define the terms, processes and concepts generally associated with CBI. This project will provide basic CBI management, selection, and development information for use by CBI trainers and managers and will support OSD and the Services in the short term development of the "Guidelines for the Development and Acquisition of CBI" called for in the House Armed Services Committee (HASC) Report on the FY86 Defense Authorization Bill. In order to meet the time line provided it will be necessary to provide commonly accepted definitions for CBI and summarize the basic organizational considerations for using CBI.

The development of CBI Definitions and Policies involves several tasks:

CBI trainers and managers will be interviewed to identify common CBI terms, processes, concepts, and guidelines in use in the military Services. The result of these discussions will be reviewed, documented and provided to the military CBI developers, managers, and users.

PROJECT 2: CBI Research and Development Review Project.

TDAC and Manpower and Training Research Information Systems (MATRIS) will undertake a cooperative effort with the OSD and Services to enhance the flow of information and transition of high-payoff R&D products to the CBI user community. The effort is designed to create a catalog or listing of the CBI R&D that is under way and planned in DoD. This will also assist in meeting the HASC guidance in their report on the FY86 Budget.

The project will involve the following tasks:

Authorization Bill on avoiding duplication of system development efforts. Establish a mutually supporting working relationship with MATRIS. TDAC and MATRIS will identify the extent of MATRIS held information in the CBI area, coordinate the approach and scope of TDAC's CBI R&D and discuss recommendations to institutionalize the collection and dissemination of CBI R&D related data.

TDAC will develop a comprehensive list of CBI R&D points of contact and projects. This information will be obtained through a literature review, inquiry with MATRIS, Defense Technical Information Center (DTIC) and other DoD data bases and discussions with CBI trainers and managers in the DoD training community.

TDAC and MATRIS will develop the necessary procedures, classification systems, and keywords to identify CBI R&D projects from the comprehensive list with major potential benefit to military training.

TDAC will publish a report containing the initial set of CBI data on projects and points of contact. TDAC and MATRIS will develop the roadmap and mechanisms which will allow MATRIS to maintain the report as needed.

### PROJECT 3: CBI Lessons Learned.

The CBI Lessons Learned Project is a relatively short term effort involving minimal resources. Both positive and negative past experiences with CBI from a number of sources in military training will be reviewed. These will be summarized in a Lessons Learned Report which will include general concepts and procedures that have been proven to be successful as well as points of contact for expertise in specific CBI areas. This could save the military considerable time, money, and resources by avoiding frequently occurring problems. For example, lessons learned as a result of an Air Force effort with Interactive Video Discs could be applied to other military settings.

The development of the CBI Lessons Learned Report involves several tasks:

CBI experts and training managers involved in CBI will be queried. Critical decision points and lessons learned in the selection, design, acquisition, and implementation of CBI systems will be determined. This task will be completed in Fiscal Year 86.

A literature search will be initiated to identify currently existing CBI handbooks and documented evaluations of military CBI projects. The most promising of these evaluations will be reviewed in detail for lessons learned data. This project will be completed in early FY 86.

The preliminary results of an Army Research Institute (ARI) CBI effort that began in FY 85 will be reviewed for lessons learned data. ARI will perform a short term CBI Lessons Learned review by evaluating two to four military CBI applications of both successful and unsuccessful efforts. Through interviews with appropriate departments and administrative personnel involved with CBI applications, project histories will be constructed. The results of the study will be synthesized and summarized for use by the military training community.

TDAC will consolidate the preliminary results of the ARI study with the results of the TDAC interviews and literature search and publish a CBI Lessons Learned Assessment Report. This project should be completed by mid 1986.

#### PROJECT 4: CBI Catalog.

A catalog of existing CBI hardware, software, and instructional materials will be developed for military users. The catalog will provide information about availability, cost, application, and points of contact for additional information. The purpose of the catalog is to aid in the selection and use of CBI. Users may find that software developed for one purpose may be useful in other areas. For example, software designed to support the development of CAI lessons in the Navy Electronic Warfare School may be useful in the Army Signal School. The development of a CBI Catalog involves several tasks:

Discuss CBI data requirements with users. Points of contact will be identified to help review user data needs, level of detail and data formats.

Identify existing CBI data sources, data bases, and in-place CBI systems. This will be accomplished through standard literature search techniques and interviews with DoD personnel involved with the development, acquisition and use of CBI.

Collect readily available data. TDAC will compile a limited data base across the Services from existing reports and studies.

Develop a preliminary CBI catalog. An organized listing of CBI projects including preliminary listings of hardware, software, instructional materials, and cost data will be developed.

Solicit user comments as to the benefits of the catalog. The preliminary catalog will be distributed to users for review.

Decide whether to continue catalog development. Users, OSD, and TDAC will determine the future requirement for a CBI catalog based on a review of the initial catalog.

#### D. CRITICAL QUESTIONS AND DECISION POINTS

1. What is the availability of CBI in each of the Services as it relates to:

- (a) Systems in development?
- (b) Systems being acquired?
- (c) Systems in use?

2. What is the extent of available data on CBI?

3. What data should be included in the catalog?

4. What type of classification system will best meet the need of TDAC users?

5. What data bases exist which could permit direct transfer of information to TDAC?

6. How important are the products developed by TDAC in the CBI program to the user communities?

7. What is the relevance and utility of data on CBI collected in industrial and non-military school environments?

E. IMPACT

The CBI issues submitted by TDAC users share the common thread of requesting data on successful CBI applications. The products developed as a result of the TDAC CBI program will: (1) assist the users in the selection of CBI, (2) save time and resources in the development of CBI, (3) identify processes and management tools beneficial in the implementation of CBI, and (4) improve the transition of high pay-off R&D CBI products to the user community.

15. CLEARING HOUSE FUNCTION  
(TDAC POC: Mr. Tony Boswell)

A. BACKGROUND

When initial taskings for TDAC were solicited, the respondents were almost unanimous in voicing the need for a central "clearing house" with the ability to serve as a single source of information on training related issues and activities in the DoD. The centralization of information will provide DoD and industry with a DoD focal point for training data with emphasis on cross-referencing and relating activities and serving as a guide to where expertise exists within the Services.

While the list of specific issues within this function is lengthy, it can generally be divided into two categories: first is the need for a repository of R&D needs and projects within the DoD, second is the need for an interface of the DoD with industry.

B. SPONSORS

ITRO, CNO, DASD, CPP&R, HQ USMC, OASD FM&P (MP&FM).

C. PLAN OF ACTION

The Clearing House function will initially be based on two projects: (1) The development of a training R&D Clearing House and (2) Interface with industry.

PROJECT 1: Training R&D Clearing House

Several users requested that TDAC act as focal point to identify who is doing training R&D and what research has been accomplished in different training areas such as performance measurement, CBI, and training costs. Related to this, TDAC has been asked to act as a facilitator for the flow of information between the training community and those in the training related R&D communities.

One of our first actions in this project was to meet with the Director of the Manpower and Training Research Information System (MATRIS) which is a part of the Defense Technical Information Center (DTIC). MATRIS maintains work unit, project, and program element level of detailed information for all DoD Manpower, Personnel and Training (MP&T) Research, Development, Test and Evaluation (RDT&E) funds. In addition, while the primary focus has been in the DoD MPT lab community, MATRIS also attempts to gather information on MPT initiatives and research from OSD, the Service headquarters and operational commands.

To date, the primary MATRIS focus has been in the personnel related area. However, the MATRIS Users Steering Group has agreed to support a joint MATRIS/TDAC recommendation that MATRIS focus more of its future efforts in the training area.

TDAC and MATRIS have already begun to work together. For example, MATRIS has agreed to become involved in the TDAC effort to identify and develop a catalog of ongoing CBI research projects. It appears that the Catalog information will be stored and maintained by MATRIS and subsequent catalogs will be provided periodically by MATRIS with TDAC support.

MATRIS and TDAC are currently developing a plan to improve communication between training related R&D and DoD training communities. Once a draft plan of action is completed, TDAC will sponsor a meeting between the Service Training Command representatives, MATRIS and TDAC to discuss the MATRIS/TDAC Plan. The plan will be then be presented to the Interservice Training Review Organization (ITRO) which was a major requestor of this function. The final plan will then be implemented by MATRIS and TDAC. The initial draft of the MATRIS/TDAC plan will be developed by the end of CY 85 and initial meetings to discuss the plan are tentatively planned early in CY 86.

#### PROJECT 2: Interface with Industry

The Interservice Training Review Organization (ITRO) and other users early on voiced the need for information on training related meetings, conferences, joint DoD/Industry meetings and seminars, and other newsworthy items. Simultaneously, industry, via the National Security Industrial Association (NSIA), expressed an interest and willingness to work closely with TDAC. In fact in November 1984 the president of NSIA suggested that DoD examine areas where TDAC and NSIA could work together. This concept was explored further at a January 1985 national NSIA meeting where a preliminary set of issues including several suggested by the ITRO were developed. The topic was again discussed at the May 1985 NSIA MPT meeting. At that meeting TDAC and the NSIA working group assigned to address this task agreed on the following topics:

1. Develop a training data exchange mechanism from industry to DoD and from DoD to industry (NSIA would take the lead to identify candidate industry data sources).
2. Develop a mechanism and process for gathering and providing training technology information to the government and industrial defense training community.
3. Develop and maintain a Defense Priority Training Issue List that Defense and Industry should address together (The TDAC role would be administrative in nature as a collector of inputs from the services and OSD).

4. Develop a training issue newsletter/bulletin to be published by the NSIA Manpower and Training committee that would provide training information, newsworthy items and upcoming meetings to government and industry training communities.

5. Investigate the benefit of a Training Technology Conference possibly as a joint effort with an existing NSIA meeting or function.

TDAC will continue to pursue these initiatives with NSIA and will discuss the progress and draft plan with the TDAC users and chain of command as they are developed.

#### D. CRITICAL QUESTIONS AND DECISION POINTS

What are the short, medium and long range training data and information needs across the MPT community and industry? What types of data and information systems, mechanisms and sources exist to which a training dimension exists or can be added? Which of these systems can be usefully linked or expanded to meet their full potential? What conferences, committees and groups are relevant to the MPT community and industry? What existing and emerging information and communication systems can be used for improving information availability and linking community users to sources?

#### E. IMPACT

Expansion and linking of existing training information systems and increased availability of training and training related data and information will result in improved program planning, increased coordination of joint efforts, reduction in unnecessary duplication of effort, reduction in time required to respond to critical training related issues and problems.

Efforts with NSIA will increase the amount and quality of information exchange between DoD and industry and will lead to more closely coordinated research and development and independent research efforts.

## 16. TRAINING TECHNOLOGY TRANSFER (TDAC POC: Mr. Steve Merriman)

### A. BACKGROUND

Federal agencies, especially the Department of Defense (DoD), make extensive investments in the development of training and training related technology. Much of the mature technologies, particularly in the areas of software programs, video disc and computer based training, are potentially transferrable among the Services (including Reserve Components), and between the federal agencies and the public and private sectors. These technology innovations are proliferating and maturing at such a rapid pace that maintaining current information on training technology applications needed for optimum decisions has become very costly and time consuming.

The Office of the Secretary of Defense (OSD) and the Services have initiated programs to improve the availability and transfer mechanisms for training technologies within the DoD training community. The Air Force, Air Training Command (ATC), has established a Training Technology Applications Program. The Army, through the Training and Doctrine Command (TRADOC) and the Army Research Institute (ARI) has initiated an ambitious program establishing the Training Technology Field Activity (TTFA) to facilitate training technology transfer. The Deputy Assistant Secretary of Defense (Military Personnel and Force Management) has identified TDAC as the focal point for training technology transfer within DoD and between DoD and the private and public sectors. Congress has recognized the desirability of transferring technology from and to the private sector. There are initiatives underway to designate the Department of Commerce (DOC) as the Federal focal point for technology exchanges with the private sector. TDAC as the DASD (MP&FM) training technology transfer focal point will work with the DOC in this initiative should it materialize.

### B. SPONSORS FOR TOPIC AREAS

ITRO, HQ USAF, USCINCEUR, OUSD(R&E), USN(CNET)

### C. PLAN OF ACTION

The objectives of the Training Technology Transfer area include establishing a single repository and designated focal point for transferring training technology data within the DoD, and between Defense, the private sector, public sector, and Federal agencies. The four primary projects necessary to achieve these goals are (1) DoD Training Technology Transfer Data Base; (2) Training Technology Transfer Lessons Learned data file; (3) Training Technology Transfer to the Reserve Components; and, (4) DoD Training Technology Transfer between the private and public sectors.



## PROJECT 1: DoD Training Technology Transfer Program Data Base

The goal of the Training Technology Transfer data base project is to develop an information network on management techniques for improving military training, quality and effectiveness gained through the controlled application of new technology, research or training methodology, and on-going experiments. This network will access automated information data bases and/or hard copy reports depending on the user and need involved.

At the request of the ATC, the initial task will be to convert, house, maintain, and support a prototype training technology data base developed in ATC's Training Technology Application Program (TTAP). The TTAP data base covers training technologies such as computer-based training (CBI), intelligent computer-assisted instruction (ICAI), artificial intelligence (AI), interactive video disc (IVD), maintenance simulators, and advanced job performance aids. The task will involve developing a prototype computerized retrieval system to access, maintain, and support the ATC TTAP data file. Using off-the-shelf software and hardware, TDAC will augment the TTAP training technology assessment data with additional data gained from other sources. Thus, the TTAP technology data will act as a baseline and additional information from other Services and data sources can be added to it.

The TDAC system design will employ a "cross-comparison summary matrix" that relates the training technologies to training and education settings. The system will also employ a common data structure across the technologies (i.e., CBT, IVD, AI, etc.), to insure its widest possible use and applicability. The system will be able to accommodate technology areas beyond that in the current TTAP data base. Such technologies as instructional development methodologies and contributions from cognitive psychology will be candidates for inclusion in the TDAC system as the new information becomes available.

The initial focus of this task will be on the CBI technology area and will incorporate the TTAP and other relevant CBI data received from other sources. As the CBI prototype retrieval system is developed and demonstrated the task will turn to the other technologies in the TTAP data base. Technologies not included in the initial TTAP data base may be added at a later date.

Relevant and available state-of-the-art training technology data beyond that contained in the TTAP file will be identified through literature reviews, site visits, and interviews with experts who have developed or are developing the technology. This data will be merged with the existing data base to provide a larger, more comprehensive source of technology information.

Once the prototype automated retrieval system is developed, an effort will be made to assess its utility and determine

needed improvements. This will be accomplished by analyzing the requests for data from the Services and developing products to aid in the assessment of new and emerging technologies for application to various training scenarios.

## PROJECT 2. Training Technology Transfer Lessons Learned Data File

The second Technology Transfer project involves establishing a historical lessons learned data file during the training technologies transfer process. For the purposes of this file, the process is assumed to encompass determining which technology is ready to be applied; selection of the training environment(s) in need of the technologies; development of the actual application procedures, curricula modification/ development, etc; and the implementation methods. Of particular interest are the lessons learned in the process of transferring training technologies to DoD agencies not primarily responsible for initial development of the transferring technology.

The project will start with discussions with Service POC's to determine the functional requirements for the lessons learned data file. Next, TDAC will work with the Services and labs to develop mutually supporting procedures and data transfer mechanisms for tracking on-going technology transfer projects. For example, TDAC has established liaison with ARI and TRADOC who are investigating technology transfer models applicable to the training technology field agencies at four U.S. Army schools. TDAC will track the Army efforts and act as a DoD-wide repository for the lessons learned data produced. This effort will start in FY86 but completion is dependent upon the availability of data.

## PROJECT 3: Transferring Training Technology To The Reserve Components

The Army Research Institute (ARI), Army National Guard, and TRADOC are jointly undertaking a project to evaluate the usefulness of currently available training technologies and methodologies to improve training in the National Guard and Reserves. Of special concern are those technologies and methods that can be used effectively in remote and dispersed locations over intermittent time periods. In the near term, TDAC will support, track the Army effort, and assist ARI and TRADOC as necessary. TDAC will also act as the long term DoD repository of data resulting from this project.

The first task in this Army project will be an ARI analysis of the perceived training needs of unit commanders in the National Guard and Reserves. ARI working with Army National Guard will determine priorities for evaluation of proposed training systems.

. A second task is the evaluation of trial implementation data from a variety of training systems such as games, computer aided instruction, video disc based instruction, simulations, etc.. These technologies will be evaluated by the Army for their potential for intermittent training, rapid train up and low density Military Occupational Specialty (MOS) training. Initial data from these first efforts will not likely be available before the end of FY88.

A long term task involves feasibility analysis of various technologies to determine cost-effective methods for delivery to remote locations at armories and units. The Army will experimentally implement and evaluate the most viable candidate(s).

The ARI project will be monitored initially by TDAC's Technical Training Transfer Branch. When TDAC has received sufficient data from ARI, this data will be transferred to the Reserve Integration Division to form the basis for an RC technology transfer file within that division.

#### PROJECT 4: Transferring DoD Training Technology To The Private And Public Sectors

Draft Congressional legislation has been introduced that would mandate the transfer of technology data from Federal agencies to the private sector and educational institutions. This is in addition to existing laws such as the Stevenson-Wilder Technology Transfer Act of 1980 that requires this type of transfer. Working drafts of this legislation would designate the Department of Commerce as the focal point for technology transfer, authorize a transfer mechanism and provide the resources required to carry out such a program.

If the legislation is enacted and resources provided, TDAC, in coordination with the Services, would act as the DoD focal point for the transfer of defense training technologies to the private sector. TDAC would work with the Services, OSD, and DOC to develop a methodology for determining the potential of training technologies for transfer; identify those technologies that were ready to transfer to the private sector without hindering the defense mission; assist in identification of civilian applications and limitations of the technologies; and the preparation of the technology transfer (documentation, etc.).

The criterion-based approach will consider definitions for transferable training technology, guidelines for its appropriate application (with DOC's assistance), and a process or model to facilitate the smooth transition of ready-for-transfer training technology. Coincidental with this task is the preparation of a cost estimation procedure for implementation of the transfer. TDAC and the DOC will collect on a continuous basis training

technology data from the private and public sector users of the advanced training technology to enhance activities described above.

If the legislation is not passed or funding is not made available, TDAC will continue to function as the DASD (MP&FM) focal point for training technology transfer and undertake whatever initiatives are possible within resource limitations.

#### D. CRITICAL QUESTIONS, DECISION POINTS, DATA COLLECTION

(1) Will Congress support establishment of an activity to facilitate technology transfer?

(2) How much technology and what kinds are available in off-the-shelf packages from the private sector and from educational institutions that will, with little or no modification, support training among federal agencies?

(3) How can we assess the current technology base, establish agreement with the needs and distribute the findings to federal agencies?

(4) How much direct transferability to the private sector can be expected and what is the level of effort required to modify technology that is not directly applicable?

(5) How do we maintain the technology data base once we have established its structure and initialized the data base?

(6) What existing and emerging information and communication systems can be used for improving information availability and linking community users to sources?

#### E. IMPACT

TDAC's development as a central repository of "needs and sources" and as a clearing house for information will increase the availability of current and accurate information across the training community. Lessons-learned information will contribute to improving technology transfer effectiveness and wider service use of proven training systems and methodologies. TDAC databases which relate training technologies to applications will enhance the manager's ability to capitalize on past successes, prevent recurrence of costly mismatches and avoid unnecessary duplication of effort.

## LIST OF ABBREVIATIONS

AC	Active Component
ADP	Automated Data Processing
AFHRL	Air Force Human Resources Laboratory
AI	Artificial Intelligence
ARI	Army Research Institute
ASD	Aeronautical Systems Division
ASTAR	Automated Simulator Test and Assessment Routine
ATC	Air Force Training Command
ATF	Advanced Tactical Fighter
CAI	Computer Assisted Instruction
c3	Communications Command and Control
CBI	Computer Based Instruction
CBISD	Computer Based Instrucion Systems Development
CBO	Congressional Budget Office
CBT	Computer Based Training
CES	Cost Element Structure
CMI	Computer Managed Instruction
CODAP	Comprehensive Occupational Data Analysis Program
COFTS	Conduct of Fire Training System
CONUS	Continental United States
DAART	Department of Army Ammunition, Ranges and Target
DDN	Defense Data Net
DMDC	Defense Manpower Data Center
DoC	Department of Commerce
DoD	Department of Defense
DoDD	Department of Defense Directive

DoDI	Department of Defense Instruction
DSB	Defense Science Board
DTIC	Defense Technical Information Center
EW	Electronic Warfare
FEA	Front-end Analysis
FRG	Federal Republic of Germany
FYDP	Five Year Defense Plan
GAO	General Accounting Office
HASC	Housed Armed Services Committee
IDA	Institute for Defense Analyses
IOT&E	Initial Operational Test and Evaluation
ITRO	Interservice Training Review Organization
IVD	Interactive Video Disc
JCS	Joint Chiefs of Staff
JEOF	Joint Exercise Observation File
JPM	Job Performance Measurement
JTEC	Joint Training Enhancement Committee
LMI	Logistics Management Institute
M&T	Manpower and Training
MATRIS	Manpower and Training Research Information System
MILES	Multiple Integrated Laser Engagement System
MMTR	Military Manpower Training Report
MOBTRAC	Mobilization Training Capacity Requirements Determination System
MOS	Military Occupational Specialty
MP&T	Manpower, Personnel and Training
NARDC	Naval Air Research Development Center

NATO	North Atlantic Treaty Organization
NGB	National Guard Bureau
NPRDC	Navy Personnel Research and Development Center
NSIA	National Security Industrial Association
NTC	National Training Center
NTSC	Naval Training Systems Center
OCONUS	Outside Continental United States
OJT	On-the-Job Training
OSD	Office of the Secretary of Defense
OTE	Operational Training Equipment
OPSEC	Operations Security
POC	Point of Contact
POM	Project Objective Memorandum
R&D	Research and Development
RDT&E	Research, Development, Test and Evaluation
RC	Reserve Component
SIMPSO	Simulator System Projects Office
SSN	Social Security Number
S/TD	Simulator and Training Devices
TDAC	Defense Training Data and Analysis Center
TIES	Task Identification and Evaluation System
TPRC	TDAC Program Review Committee
TRADOC	Training and Doctrine Command
TTAP	Training Technology Application Program
TTFA	Trainng Technology Field Activity
UK	United Kingdom

TDAC SPONSOR/USER LIST

ADCOM	Aerospace Defense Command
AFHRL	Air Force Human Resources Laboratory
ARI	Army Research Institute
CINCUSAREUR	Commander in Chief United States Army Europe
CNET	Chief of Naval Education and Training
CNO	Chief of Naval Operations
DASD FM&P (MP&FM)	Deputy Assistant Secretary of Defense Force Management and Personnel, Military Personnel and Force Management
DASD MP&FM (MPA)	Deputy Assistant Secretary of Defense Military Personnel and Force Management Director, Manpower Planning and Analysis
DASD MP&FM (O&EPM)	Deputy Assistant Secretary of Defense Military Personnel and Force Management Director, Officer and Enlisted Personnel Management
DASD MP&FM(T)	Deputy Assistant Secretary of Defense Military Personnel and Force Management Director, Training Policy
HQ ARMY	Headquarters Department of the Army
HQ USAF	Headquarters Department of the Air Force
HQ USCG	Headquarters United States Coast Guard
HQ USMC	Headquarters United States Marine Corps
ITRO	Interservice Training Review Organization
NPRDC	Naval Personnel Research Development Center
NTSC	Department of the Navy Naval Training Systems Center
OASD(C)	Office of the Assistant Secretary of Defense, Comptroller (Program/Budget)
OASD FM&P (CPP&R)	Office of the Deputy Assistant Secretary of Defense, Force Management and Personnel, Civilian Personnel Policy and Requirements



OASD FM&P (EO&SP)	Office of the Deputy Assistant Secretary of Defense Force Management and Personnel, Equal Opportunity and Safety Policy
OASD A&L(I)	Office of the Deputy Assistant Secretary of Defense, Acquisition and Logistics Installations
OASD A&L (L&MM)	Office of the Deputy Assistant Secretary of Defense, Acquisitions and Logistics, Logistics and Materiel Management
OASD FM&P (MP&R)	Office of the Deputy Assistant Secretary of Defense, Force Management and Personnel, Mobilization Planning and Requirements
OASD (RA)	Office of the Assistant Secretary of Defense, Reserve Affairs
OSD (FM&P)	Office of the Secretary of Defense, Director, Program Analysis and Evaluation
OUSD (R&E)	Office of the Under Secretary of Defense, Research and Engineering
PM TRADE	Department of the Army Project Manager for Training Devices
TRADOC	Department of the Army United States Army Training and Doctrine Command
USAF, AFSC	Department of the Air Force Headquarters, Air Force Systems Command
USAF, ATC	Department of the Air Force Headquarters, Air Training Command
USAF, SAC	Department of the Air Force Headquarters, Strategic Air Command
USAF SIM/SPO	Department of the Air Force Air Force Systems Command Aeronautical Systems Division Deputy for Simulators
USCINCEUR	Commander in Chief United States European Command
USCINCPAC	Commander in Chief United States Pacific Command
USN	United States Navy
USREDCOM	United States Readiness Command

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